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An Analysis of the International Great Lakes Levels Board Report on Regulation of Great Lakes Water Levels

WORKING PAPER V
INSTITUTIONS

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INSTITUTIONS

I. INSTITUTIONAL FACTORS IN THE DECISION TO REGULATE THE WATER LEVELS OF THE GREAT LAKES: SUMMARY AND CONCLUSIONS

Even to the most casual observer, the decisionmaking process of further regulating the Great Lakes or changing the objectives of past regulation is not one that is solely concerned with technical factors of hydrology and engineering. In our complex world, decisions which impact the public interest require complex coordination among all concerned interests, a due consideration of the legal and economic factors, political feasibility, and examination of the powers and authority of public bodies which are charged with responsibility for the public interest. These considerations call for an analysis of the institutions involved in the decisions to regulate the water levels of the Great Lakes.

The series of papers in this section are presented to focus on the key issues involved in the choice of regulation plans developed by the International Great Lakes Level Board (IGLLB), a subagency of the International Joint Commission (IJC). The Board was formed in response to public demands in the United States and Canada to investigate alternatives for further regulation of Great Lakes water levels.

The problem of fluctuating water levels is not new. The first paper in this series is an historical chronology of events which lead up to today's issues. It can be seen that man's efforts to alter the natural water environment for his benefit have not been guided by a determined objective or objectives requiring coordinated planning. Rather, each change in the operating rules for water level regulation, or each new decision has been associated with the recognized concerns and imperatives of the moment, which typically required a remedial response from the

authorities. Thus, the chronology of events which deal with regulation of the water levels on the Great Lakes is characterized by a case by case discontinuous process, lacking an overall, long range planning effort.

Of more immediate concern are the most recent actions of the IJC, taken in response to the severe economic losses to shore property interests during the abnormally high water stages in 1972-73. The IJC, constrained by its reactive role, found itself in the unenviable situation of having to make a publically pressured response before the IGLLB study was completely evaluated. The implementation of plan SO-901 on an emergency basis, coupled with the IJC's contingency statements concerning the legal and political requirements for a permanent change in regulatory objectives, brought forth a series of objections from the public most seriously damaged, hesitancy on the part of the states to endorse the action without further study, and even some very difficult questions concerning the legal basis for the IJC's course of action. These issues are addressed in the second of the series of papers on institutional analysis.

Since legislation which will attempt to resolve these issues has been drafted and is in the review stage, this state of affairs will not be prolonged into the indefinite future. The third paper of this series presents an analysis of the possible legislative outcomes, along with problem issues which are likely to remain whatever the outcome. An awareness of the most crucial issues associated with the pending legislation is necessary for a reasoned response of all states and interest groups having a stake in the outcome. It is likely that the most controversial issue will be that of compensation. Whenever a public authority changes the state of the economy, resulting in benefits to some interest and damages

to others, an overriding sense of justice and equity would seem to compel indemnity to those damaged, if the benefits exceed the losses. On the other hand, it is well recognized that compensation holds forth the possibilities of laxity in individual behavior, resulting in adverse incentives to manage land and water resources wisely.

Yet another question in the legislative possibilities is the feasibility of reasonably precise compensation. Erosion and inundation damages occur on the Great Lakes shoreline as part of a natural process, apart from any regulation plan. Compensation could be justified only for man-induced damages, separate from naturally occuring damages. The administrative costs of such a delineation should be analyzed carefully.

Finally, there are possibilities of legislative or juridical rearrangements that have not been considered in the IGLLB study. These possibilities bring forth the issues of variable diversions as another method to regulate the Great Lakes water levels. Not enough information is yet available to make reasoned judgments about the technical and political feasibility of diversions as a regulating tool. This, then, requires further study.

The fourth paper in this series on institutional issues presents an overview of the complex network of international, national, state and local governmental agencies which have a role to play in the decisionmaking process in the Great Lakes Basin. It becomes apparent that the associated interdependence of these groups requires coordinated participation, public information, and common planning goals and objectives if decisions affecting the broad public interest are not to be subject to criticisms of elitism, decisionmaking by special interest groups, and undue international/federal control over local affairs. It would seem that a part

of the present criticism of the IJC actions stems from just such a lack of broad-based planning and coordination, and the exclusion, for all practical purposes, of state and local interests from the development of regulation plans.

The State of Wisconsin's position in response to the new proposals to further regulate the water levels of the Great Lakes is being developed in its Coastal Zone Management Development Program (CZMDP). The final paper in this series examines this relationship. A major emphasis within Wisconsin's CZMDP is citizen participation, coordination of planning efforts, and public understanding of problems and resources conflicts which will lead to a unified effort of planning and management in the coastal zone. The issues of water level regulation affect the CZMDP directly. Governmental and citizens' awareness of all the major implications of new regulation plans, compensation issues, and economic interests affected is a necessary element of Wisconsin's Coastal Zone Management Development Program.

II. CHRONOLOGY OF REGULATION AND DIVERSIONS

The purpose of this section of the report is to outline the significant events and United States-Canadian agreements concerning Great Lakes water levels.

1909 JANUARY 11: The Boundary Waters Treaty between the United States and Great Britain was signed in Washington. The Articles of the Treaty which concern the Great Lakes include:

Preliminary Article - defines boundary waters as the waters along which the international boundary between the United States and Canada passes.

Article VII - established the International Joint Commission (IJC) composed of three United States commissioners appointed by the President, and three Canadian commissioners appointed by the Order-in-Council of the Canadian Government.

Article III - gave the Commission the authority to make its approval of actions conditional upon the construction of protective works and provisions for indemnity of any interest injured by the proposed action.

Article XIII - defined cases of "Special Agreement" which may supplant provisions required under the Treaty. Such agreements are intended to include direct agreements between the two governments, and also any "mutual arrangement between the United States and the Dominion of Canada expressed by concurrent or reciprocal legislation on the part of Congress and the Parliament of the Dominion."

Article IX - authorizes the IJC to investigate and make recommendations on matters referred to it by the governments. The political channel for the United States government is the Department of State, while that for the Canadian government is the Department of External Affairs (Boundary Waters Treaty, 1909).

A. Lake Superior Regulation

1913 JUNE 30 and OCTOBER 7: The Michigan Northern Power Company and the Algoma Steel Corporation of Canada each applied to the IJC under Article III for permission to obstruct, divert, and use the waters of the St. Mary's River at Sault Ste. Marie for the generation of hydroelectric power (Whiteman, 1964, p. 829).

1914 MAY 26,27: The IJC issued its Orders of Approval to the power entities for construction of diversions and control works. Provisions within the Orders included:

1) the establishment of an International Lake Superior Board of Control to formulate regulation rules and supervise the outflows.

2) the maintenance of Lake Superior water levels "as near as may be" between 600.5 and 602.0 feet in such a manner as not to interfere with navigation IGLD)*.

3) the requirement that the water surface immediately below the locks shall not be greater than 582,9 feet (IGLD)*.

4) to guard against unduly high stages of water in Lake Superior, the rules formulated by said board, when tested by the physical conditions which existed during any year of recorded high water in Lake Superior, when the monthly mean elevation of Lake Superior exceeded 602, shall give no mean monthly level of the lake greater than the maximum monthly mean actually experienced in said year (IJC, 1914).

1921 AUGUST: The construction of the control works which began in 1901 was completed and the Sabin Rule was used as a guide for regulating Lake Superior outflows (IGLLB, Main Report, 1973, p. 54).

1941 A regulation plan designated Rule P-5 replaced the Sabin Rule for the purpose of increasing minimum flow rates for power (IGLLB, Main Report, 1973, p. 54).

1951 Rule P-5 was replaced by "The Rule of 1949" in recognition of increased supplies from Canadian diversions into Lake Superior (IGLLB, Main Report, 1973, p. 54).

1955 SEPTEMBER: "The Rule of 1949" was replaced by the "September 1955 Modified Rule of 1949" for the purpose of decreasing the frequency of occurrence of low outflows from Lake Superior in the range where it is necessary to curtail the amount of water used for power generation (Maris, 1966). It was also modified to maintain certain gates open to protect the ecology of the International Rapids Section (DeCook, 1975).

1964 APRIL-DECEMBER: Substantial deviations were made from the 1955 operating rule for the purpose of raising the levels of Lakes Michigan and Huron (DeCook, 1968).

1964 OCTOBER 7: The governments of Canada and the United States submitted a reference to the IJC under authority of Article IX, Boundary Waters Treaty, for the purpose of determining whether measures within the Great Lakes Basin could be taken in the public interest to regulate further the levels of the Great Lakes (IGLLB, Main Report, 1973, pp. 1-2).

1964 DECEMBER 2: The IJC established the International Great Lakes Levels Board (IGLLB) to undertake, through appropriate agencies in Canada and the United States, the necessary investigations and studies and to

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*All elevation values are stated in terms of International Great Lakes Datum (IGLD), (1955).

advise the Commission on all matters which it must consider in making a report or reports under the said Reference. The U.S. Army Corps of Engineers was the principal agency involved in the study, and much of the initial data and methods used were based on a study completed by the Corps of Engineers in December, 1965 (Corps, 1965).

1972 SEPTEMBER 27: Congressman James O'Hara, a representative from the State of Michigan, sent a letter to the IJC expressing concern over the near record high water levels in the lower lakes, while Lake Superior was experiencing only slightly higher levels (U.S. House, Foreign Affairs Committee, 1973, pp. 75-76).

1972 NOVEMBER 8: In response to Congressman O'Hara's letter, Mr. Christian Herter, Jr., Chairman of the United States Section of the IJC, replied that the International Lake Superior Board of Control could not deviate from its rule curve for the sole purpose of alleviating damages on one lake while magnifying damages on another (U.S. House, Foreign Affairs Committee, 1973, p. 8).

1972 DECEMBER 21: A letter signed by 34 members of the House was sent to the President requesting immediate action on impoundment of more water on Lake Superior and curtailment of the diversions into Lake Superior by the Canadians. This request grew out of a conference organized by Congressman O'Hara and Representative John A. Blatnik which involved the Corps of Engineers, some two dozen congressional officers, along with representatives of the Great Lakes Basin Commission and the Great Lakes Commission (U.S. House, Foreign Affairs Committee, 1973, pp. 80-81).

1973 JANUARY 15: The Commission requested the International Great Lakes Levels Board to prepare a special interim report dealing with the possibility of operating the control works at Sault Ste. Marie in such a way as to provide relief for the Lower Great Lakes and at the same time maintain satisfactory conditions on Lake Superior (IGLLB, Interim Report, 1973, p. 2).

1973 JANUARY 22: An "Emergency Application" was submitted by the United States to the IJC for Amendment of the Order of May 26, 1914. The Application requests the IJC to authorize and direct the United States to undertake the following emergency measures:

> 1) to reduce water releases for power generation through power canals or other facilities op erated under the authority and jurisdiction of the United States in the St. Mary's River to the extent necessary or feasible, in the judgment of the United States, to relieve the critically high water conditions on the lower Great Lakes, such reduction in flow in no event to be greater than the flows available for power purposes on the United States side at the time of such reductions under the Order of May 26, 1914, and other applicable orders of the IJC or of its boards.

2) to restrict or prevent such flows for such periods as the United STates may deem necessary, in no event longer than six months, or until the IJC shall direct that such flows be restored.

This request was to be considered pursuant to Rule 9 of the 1964 amended IJC Rules of Procedure which allows the Commission to "suspend, repeal, or amend all or any of the Rules of Procedure at any time, with the concurrence of at least four commissioners."

The United States government agreed to deal with claims for losses resulting on either side of the border from the approval of the Application in accordance with applicable principles of United States law and international law, to the extent that such losses result from levels of Lake Superior above the maximum elevation specified in the IJC Order of May 26, 1914 (U.S. Department of State, "Emergency Application", 1973).

1973 JANUARY 24: Mr. Richard K. Cook, a legal advisor from the State Department, informed Congressman O'Hara that the Canadians had curtailed the diversions into Lake Superior, and that the United States would "propose to take action by February 1 to effect significant increasings in the water stored in Lake Superior by closing down power facilities on the St. Mary's River" (U.S. House, Foreign Affairs Committee, 1973, p. 82).

1973 JANUARY 30: The IJC "directed its International Lake Superior Board of Control to reduce by almost 25% the current outflow from Lake Superior as a further measure to alleviate the high water levels plaguing the lower Great Lakes (U.S. House, Foreign Affairs Committee, 1973, pp. 83-84).

1973 MARCH 15: The International Great Lakes Levels Board submitted its interim report on Lake Superior regulation to the IJC recommending a plan designated SO-901. The basis of the plan is to operate the control works so as to keep the levels of Lakes Superior and Michigan-Huron at the same relative position with respect to their recorded means and standard deviations. An economic evaluation of the May, 1973, to April 1974 period under SO-901 compared with the September 1955 Modified Rule of 1949 shows damages to Lake Superior shore property interests of 5.3 million dollars, while Lakes Michigan-Huron shore property interests would experience benefits of 8.1 million dollars. A table showing the estimates of benefits to several interests for all the Great Lakes under different water supply conditions is given in Appendix A (U.S. House, Foreign Affairs Committee, 1973, p. 117).

1973 SPRING: Public Hearings on the March 15 interim report were held by the Commission in Rochester, Toronto, Detroit, and Sault Ste. Marie, and a Public Meeting was held in Duluth (Corps, 1974, p. 144).

1973 JUNE 29: The IJC submitted to the governments a "Special Interim Report on Lake Superior Outflows to Provide Relief from High Water Levels on the Lower Great Lakes." Within the report the Commission recommended a change in the objective for regulation of Lake Superior that would

consider the conditions of the lower lakes as well as Lake Superior, rather than considerations of the conditions of Lake Superior alone. The regulation objective and criteria set forth in this interim report are given in Appendix B. The Commission also recommended that the governments make provisions for the disposition of claims for damages resulting from the operation of the control works under the new objective to be in accordance with the intent of Article VIII of the Treaty (IJC, Special Interim Report, 1973, pp. 22-23).

1973 JUNE 30: The Commission announced that due to the continuing emergency conditions on the Lower Great Lakes it intended to continue, on a temporary basis, regulating Lake Superior outflows to meet the objective and criteria recommended in its special interim report unless otherwise instructed by the governments (Smith, 1975, p. 7).

1973 DECEMBER 7: The International Great Lakes Levels Board submitted its final report to the IJC (IGLLB, Main Report, 1973).

1974 FEBRUARY 26: The IJC released the main report of the International Great Lakes Levels Board study. The report recommends implementation of Plan SO-901 and concludes:

1. Small net benefits to the Great Lakes System would be achieved by a new regulation plan for Lake Superior which takes into consideration the levels of both Lake Superior, and Lakes Michigan and Huron.

2. Regulation of Lakes Michigan-Huron by the construction of works in the St. Clair and Detroit Rivers does not warrant any further consideration.

3. Further study is needed of the alternatives for regulating Lake Erie and improving the regulation of Lake Ontario, taking into account the full range of supplies received to date.

4. The hydrologic monitoring network of the Great Lakes Basin should be progressively improved.

5. Appropriate authorities should act to institute land use zoning and structural setback requirements to reduce future shoreline damage (IGLLB, Main Report, 1973, pp. 251-252).

1974 APRIL 22: A letter was sent by the United States government to the IJC. Within the letter was the following:

> The Commission was advised by the United States government that agreement had been reached in principle with representatives of Canada to seek permanent implementation of the Commission's recommended regulatory objective and criteria.

Final action by the governments will require political approval in Canada, and will require completion of environmental impact studies and congressional approval of appropriate implementing legislation in the United States.

The United States requested the Commission to direct its International Lake Superior Board of Control to continue regulating outflows to meet the recommended objective and criteria (Smith, 1973, p. 7).

1974 SEPTEMBER: The Detroit District of the U.S. Army Corps of Engineers completed a Draft Environmental Impact Statement proposing implementation of Plan SO-901. The estimated capital and annual costs of winter operation for SO-901, based on electrical heating of gates, are about $574,000 and $70,000 respectively (Corps, 1974, p. 15).

1974 FALL: The Commission held a series of thirteen public hearings during the fall of 1974 at several locations throughout the Great Lakes Basin to receive the views of interested persons and their comments. Recommendations by the Great Lakes Basin Commission (developed by the Ad Hoc Committee For Review of the IGLLB Study, which was established by the Great Lakes Basin Commission (GLBC)) and the views of several of the adjacent states were presented. Many statements were recieved by concerned individuals and organizations at the November 8, 1974, Duluth Hearings (GLBC "Consideration...", 1975; see Appendix E).

1975 SPRING: Canadians resumed their diversions into Lake Superior, (Leonard, 1975).

1975 APRIL 23: With the approval of the IJC, the International Great Lakes Levels Board agreed to cooperate with the Great Lakes Basin Commission and the Great Lakes States to provide basic data used in the IGLLB Study. The GLBC had previously asked Mr. Christian Herter, former chairman of the U.S. Section of the IJC, to agree on a meeting between the technical personnel of the U.S. Section of the IJC, the IGLLB, the GLBC staff, and personnel from the concerned states to discuss aspects of the IGLLB Report (March 4). Mr. Herter responded by suggesting a series of individual state and GLBC independent approaches to the IJC (March 14). On April 9 the IGLLB agreed to meet with the GLBC and the Great Lakes States to discuss their report (GLBC, "Consideration...", 1975).

1975 JUNE 17: Henry P. Smith III, Chairman, United States Section of IJC, spoke at the Great Lakes Commission meeting in Toronto. The Chairman stated that the IJC intended to continue on a temporary basis regulating Lake Superior outflows to meet the objective and criteria proposed in their June 29, 1973, interim report. The IJC plans to submit its final report to the governments by the fall of 1975 (Smith, 1975, p. 9).

1975 AUGUST: Mr. Ben DeCook, Chairman, Regulation Subcommittee, IGLLB, informed the Water Resources Management Workshop that recommendations for monthly outflow at Lake Superior are being made by the Detroit District of the U.S. Corps of Engineers which are submitted to the International Lake Superior Board of Control for consideration. The

recommendations are based upon an analysis of the outflows called for by the SO-901 plan, and the September 1955 Modified Rule, as well as an analysis of 12-month supply forecasts. This procedure is used in attempting to prevent the level of Lake Superior from exceeding the 602 limitation.

B. Lake Ontario Regulation

Regulation of Lake Ontario which begain in April, 1960, was authorized by the IJC as part of the St. Lawrence Seaway and Power Project. For this reason, a brief outline of the project has been included.

1941 MARCH: The United States and Canada signed an agreement for the Development of Navigation and Power in the Great Lakes-St. Lawrence Basin. The agreement, if authroized by Congress, provided for the construction of a 27-foot deep waterway from the head of the Great Lakes to the Atlantic, the development of a combined power-navigation scheme in the International Rapids section of the St. Lawrence River, the preservation of the scenic values of Niagara Falls, combined with increased utilization of Niagara power, the stabilization of the situation in regard to the Chicago diversion, and the utilization for power purposes of water which would be diverted into the Great Lakes system from other watersheds, such utilization being granted to the country making the diversions (Willoughby, 1966, p. 187).

1951 SEPTEMBER: President Truman and Prime Minister St. Laurent met and agreed on the vital importance to the security and the economies of both countries of proceeding as rapidly as possible with both the seaway and power phases of a United States-Canadian St. Lawrence Project. This was in recognition of the fact that Congress had not (and would not) approve the Agreement of March 19, 1941 (Willoughby, 1961, pp. 233-234).

1951 DECEMBER: The St. Lawrence Seaway Authority of Canada was created with power either to construct and operate an all-Canadian 27-foot waterway from Lake Erie to Montreal or to cooperate with an appropriate authority in the United States in developing and maintaining a joint Seaway project (Willoughby, 1961, p. 235).

1952 JUNE 25: The two governments submitted a reference under Article IX to the IJC to determine, having regard to all other interests, whether measures could be taken to regulate the level of Lake Ontario for the benefit of property owners along the shores of the Lake who had recently experienced extensive damage from conditions of high water. The IJC then organized an International Lake Ontario Board of Engineers to carry out the investigations and make recommendations to the Commission (Whiteman, 1964, p. 861).

1952 JUNE 30: The two governments filed similar applications for approval by the IJC of a project for the construction, jointly, of works in the International Rapids section of the St. Lawrence River for the development

of hydroelectric power. The works were to be constructed and operated so as to be adaptable to the "improvement" of the International Rapids section for navigational purposes (Whiteman, 1964, p. 864).

On the same day, an agreement was made, by an exchange of notes between the two governments, that the Canadian government would construct locks and canals on the Canadian side of the international boundary to provide for uninterrupted 27-foot navigation between Lake Erie and Montreal (Willoughby, 1961, p. 241).

1952 OCTOBER 29: The IJC issued an Order of Approval for the joint construction of works for the development of power and the furtherance of navigation in the International Rapids section of the St. Lawrence River. Provisions of the order included:

1)The establishment of an International St. Lawrence River Board of Control to ensure that certain conditions of the Order relating to Lake Ontario levels and outflows were complied with.

2) A requirement that suitable and adequate protection and indemnity for all interests that are injured by the actions be made in accordance with the laws of the respective governments and under Article VIII of the treaty.

3) Recognition of the Hydro-Electric Power Commission of Ontario as the entity to construct the Canadian part of the power phase (IJC, Dept. of State Bulletin, 1952).

1952 NOVEMBER 5: The Canadian Ambassador transmitted to the Secretary of State a note stating that, inasmuch as the IJC had approved the Power Plan and Congress had not approved the Agreement of 1941, the Canadian government considered the Agreement "as having been superseded." The Canadian government then requested continued cooperation in completing the arrangements for proceeding with the projects in conformity with the exchange of notes of June 30 (Whiteman, 1964, p. 810).

1953 JANUARY 9: L.B. Pearson, the Secretary of State for External Affairs, announced that, once an American entity had been designated to cooperate with Ontario in the development of power in the International Rapids section, if the United States wished to put forward "a specific proposal" for the joint construction of the Seaway, the Canadian government would consider such a proposal (Willoughby, 1961, p. 246).

1953 APRIL 24: President Eisenhower announced in a press release that, upon the advice of the National Security Council, he was recommending that the United States "participate in some way" in the Seaway's construction (Willoughby, 1961, p. 250).

1953 JULY 15: The Federal Power Commission decided that the Power Authority of the State of New York would receive a license, allowing it to join with the Hydro-Electric Power Commission of Ontario in constructing the works needed for the power phase of the St. Lawrence project (Whiteman, 1964, p. 787).

1954 MAY 13: The St. Lawrence Seaway Development Corporation was created by the Wiley-Dondero Act to construct and operate works necessary for the American part of the Seaway and to consummate certain arrangements with the St. Lawrence Seaway Authority of Canada relative to construction and operation of the 27-foot Seaway (Willoughby, 1961, pp. 247-263).

1954 AUGUST 17: An agreement was made between the United States and Canada relating to participation by the United States in the construction of navigational facilities for the St. Lawrence Seaway project (Whiteman, 1968, p. 761).

1955 JANUARY: An interim report was submitted by the International Lake Ontario Board of Engineers to the International Joint Commission under the provisions of the June 25, 1952 Reference (Whiteman, 1964, p. 862).

1955 MAY 9: In furtherance of the June 25, 1952 Reference, the IJC recommended adoption by the two governments of the following:

1) A range of mean monthly elevations for Lake Ontario during the navigation season of 242.77 to 246.77 feet (IGLD) "as near as may be."

2) Criteria for a method of regulation of outflows and levels of Lake Ontario applicable to the works in the International Rapids section of the St. Lawrence River (IGLLB, Appendix C, Vol 1, pp. 96-105).

3) Plan of regulation No. 12-A-9 subject to minor adjustments that may result from further detailed study and evaluation by the Commission (IJC, Dept. of State Bulletin, 1956).

1955 DECEMBER 3: Both governments approved the range of stage, criteria, and plan of regulation recommended by the IJC (IJC, Dept. of State Bulletin, 1956, p. 228).

1956 JULY 2: The IJC released a "Supplementary Order of Approval" to amend the 1952 Order. Provisions of the Supplementary Order included the conditions set forth in the recommendations made by the Commission on May 9, 1955 (IJC, Dept. of State Bulletin, 1956).

1958 DECEMBER: The International Lake Ontario Board of Engineers submitted their final report to the IJC under the Reference of June 25, 1952 (Whitemand, 1964, p. 863).

1959 APRIL 25: Official opening of the St. Lawrence Seaway with a 27-foot channel from the Atlantic Ocean to Lake Erie, (Willoughby, 1961, p. 269).

1960 APRIL 8: The IJC directed its International St. Lawrence River Board of Control to regulate Lake Ontario under a plan of regulation designated Plan 1958-A. This plan was designed by the Board of Control to meet the range of stage and criteria specified in the Supplementary Orders of Approval (Whitemand, 1964, p. 865).

1962 JANUARY: The IJC replaced Plan 1958-A with Plan 1958-C for the purpose of reducing the frequency of low flows at Montreal (Maris, 1966, p. 51).

1963 OCTOBER 3: The IJC approved Plan 1958-D, which provided for a slight reduction in the frequency of low flows during the navigation season and a slight increase of low flows during the non-navigation season, (Maris, 1966, p. 51).

1964 Substantial deviations were made from Plan 1958-D under the direction of the International Lake Superior Board of Control to benefit the lower lakes, which were experiencing extreme low water supplies. Procedures used to determine the water releases during this period of deviation were based on statistical supply forecasts (DeCook, 1968, p. 266).

1965 Regulation of Lake Ontario outflows resumed in accordance with Plan 1958-D. The plan is used by the Board of Control in consultation with the Power Authority of the State of New York, the Hydro-Electric Power Commission of Ontario, and other interests concerned with compliance with the criteria and range of stage stated in the IJC Supplementary Order.

1972 DECEMBER: Deviations were made from Plan 1958-D for the purpose of reducing the level of Lake Ontario. This action was approved by the IJC and implemented through the International St. Lawrence River Board of Control (IGLLB, Main Report, p. 236).

C. Diversions

Water has been diverted into, out of, and within the Great Lakes Basin. Four major diversions have taken place and are presently in operation. Water has been diverted into the Basin from Long Lake and the Ogoki River, out of the Basin at Chicago, and within the Basin through the Welland Ship Canal. The estimated effects of these diversions are presented in Appendix D.

1848 CHICAGO: The amount of water diverted from the Great Lakes Basin at Chicago has varied, reaching a maximum of 11,400 cfs for October, 1929, and a minimum of 1,800 cfs for March, 1968. Water is diverted directly from Lake Michigan at Wilmette, the Chicago locks, and at Calumet Harbor. Approximately 1,700 cfs is pumped from the lake by the Chicago Metropolitan Sanitary District, most of which is discharged into waterways which flow into the Des Plaines River which is part of the Mississippi River Basin. The flow of the Chicago and Calumet Rivers, which originally reached Lake Michigan, has been reversed into the Des Plaines River. The sum of these diversions has served four main purposes: to dilute the effluent of the Sanitary District; to allow for navigation in the Sanitary and Ship Canal; to provide for public water supply; and to increase power generation at Lockport and

Marseilles, Illinois. The total amount diverted from the Great Lakes Basin is determined at Lockport. On June 12, 1967, the U.S. Supreme Court issued a decree which limits the sum of the diversions to an average annual rate of 3,200 cfs, accounted for every five years with an average for any one year not to exceed 3,520 cfs (GLBC, Framework Study, Appendix 11, pp. 119-123).

1913 WELLAND SHIP CANAL: This diversion connects Lake Erie at Port Colborne, Ontario, with Lake Ontario at Port Welles, Ontario. The average flow since 1950 is about 7,000 cfs. The construction of a 25-foot canal was completed in 1932 under agreements between the United States and Canada (Willoughby, 1961, p. 129). By 1962 the Canadians had deepened the canal to 27 feet for the improvement of navigation.* The principal uses of the canal are for power and navigation (Kirshner, 1968, p. 287).

1939 LONG LAKE: This Canadian diversion connects the headwaters of the Kenogami River, which originally flowed through the Albany River Basin, with Long Lake. Long Lake flows into the Aguasabon River, which discharges into Lake Superior about 155 miles east of Port Arthur, Ontario. Since 1940, an average of 1,450 cfs has been diverted into Lake Superior. In 1948, a hydroelectric power plant was constructed to make use of the increased flow of the Aguasabon River (GLBC, Framework Study, Appendix 11, pp. 47-51).

1943 OGOKI RIVER: This Canadian diversion connects part of the Ogoki River, which originally flowed through the Albany River Basin, with the headwaters of the Little Jackfish River. The Little Jackfish River flows into Lake Nipigon and, thence, through the Nipigon River into Lake Superior about 60 miles east of Port Arthur. Approximately 4,000 cfs has been diverted into Lake Superior, making the total Canadian diversion an average of approximately 5,450 cfs. The additional flow into Lake Nipigon is used by three hydroelectric power plants on the Nipigon River (GLBC, Framework Study, Appendix 11, pp. 47-51).

The Long Lake-Ogoki diversion has varied from 17,680 cfs in June, 1966, to 985 cfs in May, 1952. The minimum in May, 1952, occurred in response to a request by the United States to terminate the diversion during the period of high lake levels. The diversions were authorized by an exchange of note agreement in 1940 and 1941, which allowed the Canadian government to use additional water equivalent in quantity to the diversions for power at Niagara Falls. The notes were exchanged in recognition of increased demands for power during war times, and pending the conclusion of the March 1941 Great Lakes-St. Lawrence Agreement. On February 27, 1950, the Niagara River Treaty was signed. The Treaty provided that the waters made available

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*By 1962 the St. Clair and Detroit Rivers were also deepened to 27 feet for the improvement of navigation by the U.S. Army Corps of Engineers. This action, combined with a 25-foot dredging from 1933-1967 resulted in a lowering of the levels of Lakes Michigan and Huron by an estimated .59 feet (Leonard, 1975).

for power purposes be divided equally between the two governments. Within Article III of the Treaty it states that "...waters which are being diverted into the natural drainage of the Great Lakes System through the existing Long Lake-Ogoki works shall continue to be governed by the notes exchanged..." (Whiteman, 1964, p. 810).

III. AN ANALYSIS OF THE IJC'S ACTIONS SINCE 1972

This analysis of the IJC's actions since 1972 shall attempt to evaluate whether those actions were (1) consistent with the Orders of Approval and Opinions of 1914, and (2) within the scope of authority granted to the Commission by the Treaty of 1909. In addition certain observations regarding proposed U.S. legislation on the subject will be offered.

When the high water levels became critical on the lower Great Lakes, the IJC received numerous letters, two of which were from Congressman James G. O'Hara of Michigan dated September 27 and October 18, 1972. Representative O'Hara asked the Commission to regulate the outflow from Lake Superior in order to alleviate the damages on the lower Great Lakes and still reasonably protect the various interests and property located on the Lake Superior shoreline (U.S. House, Foreign Affairs Committee, 1973, pp.75-78). The IJC declined to act stating that the Orders of Approval of 1914 do not grant it the authority to regulate Lake Superior so as to benefit the lower Great Lakes. In a letter to Representative O'Hara, the IJC stated that "While it is true that the board has in the past deviated from its rule curve under certain circumstances, it could not deviate for the sole purpose of alleviating damages on one lake while magnifying damages on another lake." (U.S. House, Foreign Affairs Committee, 1973, p.78). This refusal to act produced considerable criticism. It has been argued that in a sense each modification of the "rule curve" or decision not to deviate from the "rule curve" is a decision by the IJC as to who will be damaged and to what extent (Zile, 1974, pp.52-53). Representative O'Hara has argued that the Commission has taken the "narrowest view of its duties" under the Treaty and that equity requires that the IJC regulate the outflow from Lake Superior so as to alleviate damages on the lower Great Lakes (U.S. House, Foreign Affairs Committee, 1973, pp.73-75).

Is this criticism justified? An examination of the Order of Approval and Opinions of 1914 seems to support the IJC's interpretation of its authority rather than that of its critics.

The stated objectives of the Orders of Approval of 1914 are to "benefit navigation and reasonably protect the property and interest, public and private, in both countries above said works." Although the IJC has been concerned with protecting navigation and power interests (it should be kept in mind that the Orders of Approval are the result of applications from two power companies) it is also concerned with protecting the rights of property owners along the shore of Lake Superior. The two 1914 Opinions written by James A. Tawney and Th. Chase Casgrain, Chairmen of the U.S. and Candian Sections of the IJC, respectively, illustrate that the IJC was concerned about the effect of its Orders on riparian rights. This concern for riparian rights is a continuing one and was evidenced once again in 1952 when the IJC issued its Order of Approval for the regulation of Lake Ontario.

The Tawney and Casgrain Opinions also clearly state that the objectives of the Orders of 1914 confined the IJC's scope of concern to those interests located "above" the remedial or protective works constructed by the two power companies--in other words, to those located on Lake Superior. While the Opinion by Mr. Casgrain speaks of regulating Lake Superior with sufficient flexibility "to meet any ordinary and natural emergency", the emergency of which he speaks is one that might occur on Lake Superior (IJC, Algoma Steel, 1914, p.457).

In his Opinion Mr. Tawney states that as regards the issue of compensation the two Applications fell within paragraph 7 of Article 8 of the Treaty of 1909. Paragraph 7 provides as follows:

> In cases involving the elevation of the natural level of waters on either side of the line as a result of the construction or maintenance on the other side of remedial or protective works or dams or other obstructions in boundary waters or in waters flowing therefrom or in waters below the boundary in rivers flowing across the boundary, the commission shall require, as a condition of its approval thereof, that suitable and adequate provision, approved by it, be made for the protection and indemnity of all interests on the other side of the line which may be injured thereby.

Mr. Tawney points out that the IJC interpreted paragraph 7 as placing on the Commission the duty of requiring as a condition of its appoval of an application that suitable and adequate provision be made for such protection and indemnity (IJC, Michigan Northern, 1914, p.429). The Commission felt that it had an obligation to assume this responsibility because as Mr. Tawney states:

> ...it is especially significant that the Governments have not reserved to themselves any responsibility whatever for protecting the rights and interests of the people on the other side of the line from injury on account of the obstructions and diversions proposed. They do not even recognize that they have any responsibility in the premises beyond the power they have given the commission to protect the interests on the other side of the line by suitable provisions placed in its order for that purpose. (IJC, Michigan Northern, p.430).

The IJC has taken the position that it has the authority pursuant to paragraph 7 to decide who shall do the compensating and what shall constitute "suitable and adequate" compensation. The IJC did not address the issue of monetary compensation for riparian owners during their consideration of the Applications of 1914 because compensating works appeared to be adequate and no compensation was asked for.

The Opinions of Tawney and Casgrain also provide valuable insight into the challenges made by the U.S. to the IJC's authority. The IJC has interpreted the Treaty of 1909 as giving the Commission the implied power to retain jurisdiction to amend orders of approval so as to direct alterations

in remedial or compensating works in order to adequately and suitably protect interests on either or both sides of the international boundary line. This right to retain jurisdiction was challenged in 1914 by the U.S. who felt that the power of the Commission was "limited to approving and disapproving the application and the plans presented" (IJC, Michigan Northern, p.430). This view was strongly rejected by Mr. Tawney who said:

> ...the contemplated project is of such exceptional magnitude, and doubt is manifested by both Governments as to the adequacy of the works intended to make the obstructions and diversions effective, thereby involving possible injury to large public and private interests, it is clear that if, in the judgment of the commission, it is necessary to suitably and adequatly protect the interest on the other side of the line, it retain jurisdiction over those works to the end that such jurisdiction may at any time hereafter be invoked for that purpose, it is the duty, as well as the responsibility, of the commission to do so, and for this purpose full power is conferred by the treaty. (IJC, Michigan Northern, pp.430-431,emphasis added).

He further states:

> The power of the commission under the treaty, to reserve as a condition of its order the right to hereafter, on application, modify such order in any manner found to be necessary to make the works of the applicant fully adequate for all the purposes they were originally intended, is so obvious from the language of the treaty, that if this power were questioned by anyone, other than by one of the high contracting parties, it would not call forserious consideration. (IJC, Michigan Northern,p.426).

This right to retain jurisdiction has been formally recognized by all parties and is set forth in Rule 12 of the IJC's Rules of Procedure.

The other challenge involved the issue of who should control the compensating works after their construction. The U.S. felt that control should reside with the government in whose territory the works were located. Canada, public and private interests in both countries, and the IJC all felt that control should reside with the Commission. The IJC felt that since the attempt to regulate Lake Superior was a huge undertaking and largely experimental, and since its effect was international, international control was necessary to insure adequate protection of all interests in both countries.

This latter view is the one that prevailed. (IJC, Michigan Northern, pp.417-420).

The context of this historical background provides a basis to examine the subsequent actions of the IJC. On January 26, 1973, the IJC received an application from the U.S. State Department. The application was termed by the U.S. as an "emergency application" and it requested that the IJC amend its Order of May 26, 1914 or take any other action necessary to authorize and direct the United States "to reduce water releases for power operation through power canals or other facilities operated under the authority and jurisdiction of the United States in the St. Marys River to the extent necessary or feasible, in the judgment of the United States, to relieve the critical high water conditions in the lower Great Lakes..." (U.S. Department of State, Emergency Application, 1973). The stated purpose of the application was to reduce the damages occurring to riparian interests on the lower Great Lakes. The application also requested that the reduced flow be for a period not to exceed 6 months or until the IJC directed the U.S. to restore the outflow. The U.S. also indicated that it would "deal with claims for losses resulting on either side of the border" from the approval of the application to the extent that such losses result from levels on Lake Superior above the 602 ft. maximum permitted by the Order of 1914. The Government of Canada expressed its positive concern and since the Treaty of 1909 gives the IJC the implied power to take emergency action (a power recognized in 1914 by Mr. Casgrain), the Commission directed the International Lake Superior Board of Control on January 30, 1973, to deviate from its current regulation plan and reduce Lake Superior outflows to the minimum winter outlflow allowed under the regulation plan. Although the IJC initially intended for the deviation from the previous regulation plan to last for only 3 months, it has remained in effect through September 1975.

The IJC apparently did not consider this emergency application as an instrument upon which it could base a permanent amendment to the objectives of the Orders of 1914, probably because the Commission felt that the application was deficient in two important respects. First, in terms of duration it was not meant to be a permanent solution. Second, the U.S. proposal for compensation was at best vague and probably did not satisfy the Treaty's requirements of "suitable and adequate" compensation that is a necessary element for the IJC to approve any amendment to the Orders. It should be remembered that the IJC's decision to deviate from the former regulation plan was made within the context of the ten year study undertaken by the International Great Lakes Levels Board as the result of the 1964 reference to the Commission. Therefore, although the IJC acted within four days after it received the emergency application, the decision to act was not made without a substantial body of technical information and consideration of the problem.

While a case can be made that the IJC had the implied power pursuant to the Treaty of 1909 to take emergency action upon receipt of the U.S. application, how long can such power be used to justify this course of action? Perhaps a criticism that can be made of the IJC is that as time passes it becomes increasingly difficult to legally justify, in the IJC's own terms, the continuation of this regulation of Lake Superior for the benefit of the lower Great Lakes. What was intended to authorize a six-month regulation plan has been used to justify a plan which is almost three years old. At some point in time the IJC will be acting beyond the scope of its authority under the Orders of 1914 or the Treaty of 1909.

In June of 1973 the IJC issued its "Special Interim Report on Regulation of Lake Superior Outflows To Provide Relief From High Water Levels On The Lower Great Lakes." This Interim Report was based on the IGLLB's

ten-year study and contained interim recommendations to the two governments for a long term resolution to the high water level problem. Among the Interim Report's recommendations the IJC requested that the two governments jointly grant to it the "specific authority" to amend its Orders of Approval of 1914 and to prescribe a plan of regulation for Lake Superior having the objective of benefiting interests throughout the Great Lakes system without undue harm to Lake Superior (IJC, Special Interim Report, 1973, p.22). Just what the IJC meant by "specific authority" is not known. There does not seem to be any legal reason why a properly worded application with a provision for suitable and adequate compensation would not be sufficient basis to grant such authority to amend. If an application can support the objectives and criteria of the 1914 Orders, another application should be sufficient corroboration to amend them. Another theorectical possibility would be a "special agreement" such as an exchange of notes by the two governments pursuant to Article XIII of the Treaty. According to a statement made by Henry P. Smith III, Chairman, U.S. Section of the IJC on June 17, 1975, this "specific authority" has now been regarded as consisting of "political approval in Canada" and the "completion of environmental impact studies and Congressional approval of appropriate implementing legislation in the Unites States". If "political approval in Canada" is construed to mean concurrent or reciprocal legislation, then in effect a special agreement could result; special agreements have been utilized on numerous occasions to either expand or reduce the jurisdiction of the IJC. However, the IJC is obviously not pursuing a special agreement route which could possibly take continuing authority over lake level management out of their hands.

The IJC is an organization which historically has gone to great length to remain non-political and avoid controversy where possible. However, it now finds itself involved in a highly controversial situation and apparently is seeking manifest political support from the two governments for the proposed amendment to the Orders of 1914.

The Interim Report also contains the following recommendation:

> ...that the Government of Canada and the Government of the United States make provisions for the disposition of claims for physical injury or damage to persons or property occurring in their respective territories and resulting from the maintenance and operation of the existing control works in the St. Marys River pursuant to the said objective and criteria, and for the satisfaction of such claims as are valid. (IJC, Special Interim Report, 1973, p.23).

The IJC states in the Report that it is basing this recommendation on the requirements of Article VIII of the Treaty of 1909 which call for "suitable and adequate conditions for the protection and indemnity of all interests on both sides of the international boundary." It is the position of the IJC that "The Boundary Waters Treaty does not authorize the Commission to approve actions which would cause damage to any interests, unless it requires that suitable provision be made for protection and indemnity". (IJC, Special Interim Report, 1973, p.19). This attitude is completely consistent with the Commission's position as set forth in the Orders of Approval and Opinions of 1914.

The executive branch of the U.S. Government has decided that the "specific authority" that will be granted to the IJC is to take the form of legislation and in so doing has elected to share with the Congress the responsiblity for the proposed regulation plan and all its ramifications, both political and economic. This course of action may well have been reached because Congressional approval is required for the appropriations which will be necessary to support any compensation plan, and thus the authorization to amend the 1914 Orders and implement the compensation plan could be placed

in one legislative package.

As of 30 September 1975 the details of this legislation have not been made public, but it is known that the legislation contains two elements: first, the authorization of the specific authority to amend the 1914 Orders, and second, a compensation plan. The legislation was prepared by the U.S. Army Corps of Engineers upon the request of the State Department. The State Department has the primary responsibility in this area, but the Corps has the experise. It is our understanding that the proposed legislation has been approved by the Secretary of State and the Secretary of the Army, or their respective subordinates, and as of 30 September 1975 is now with the Office of Management and Budget (OMB) for review. OMB will either approve or disapprove on behalf of the executive branch. If the OMB and the Office of the President approve the legislation, it will be sent to Congress under a "Speaker's Letter" saying that this proposed legislation is part of the President's program. Only at this point will the contents of the legislation become available to the public, and, in turn, the legislation will be referred to the appropriate Congressional committees for consideration. Once the legislation has entered the public political forum, the States will have an opportunity to influence its content. Through their Governors, Congressional delegations, and the Great Lakes Basin Commission, they can comment and suggest whatever amendments they feel are necessary. State action may be more effective in the Congressional forum than it would be in attempting to persuade or disuade the IJC on a given policy position.

IV. LEGISLATION AND POSSIBLE INTERNATIONAL AGREEMENTS CONCERNING GREAT LAKES WATER LEVELS REGULATION

Introduction

Congressional legislation or future agreements between Canada and the United States concerning Great Lakes water levels involve two major areas: (1) granting the International Joint Commission (IJC) the authority to implement new regulation objectives on Lake Superior, and addressing the problems of compensating those injured by the new objectives, and (2) changes in the diversions and discharge capacity of the Great Lakes system. The IJC has requested legislation which authorizes it to modify the objectives and criteria for regulating Lake Superior. If Canada, Congress, and the Administration grant their approval, the IJC would regulate the levels of Lakes Superior and Michigan-Huron so that the levels are at the same relative position with respect to their mean levels. In addition, the IJC has stated that under the Boundary Waters Treaty of 1909 the Commission may not approve of actions affecting lake levels which damage any interest "unless it requires that suitable provision be made for protection and indemnity" (IJC, Special Interim Report, 1973, pp. 18-19). The Great Lakes states, through the Great Lakes Basin Commission (GLBC), have supported the concept of a new operating rule for Lake Superior if adequate compensation is provided to the affected parties (see Appendix E).

In addition to the IJC's request for legislation, further Congressional and international action on the diversions into and from the basin could modify the thrust of the International Great Lakes Levels Board (IGLLB) study. These additional factors may include reconsideration of the Chicago diversion, the 1958-D operating rule for Lake Ontario, the Long Lake-Ogoki diversions,

and the Welland Canal. Although Congressional, judicial, and international action could affect lake levels, these possibilities are not integrally related with modifications in the IJC's operating objective for Lake Superior.

New Regulation Objectives for Lake Superior

A. Enabling Authority for the IJC

In its June 1973 Special Interim Report to the United States and Canada, the IJC did not recommend a specific regulation plan. Rather, the Commission asked the governments to (1) approve the concept of balancing Lake Superior with Lakes Michigan-Huron while satisfying certain criteria and (2) grant the IJC the authority to implement such a plan (IJC, Special Interim Report, 1973, pp. 17-20). Although the IJC has regulated the levels of Lake Superior since February 1, 1973 to meet the objectives stated in the Special Interim Report, this action has been on a temporary basis. Permanent implementation of the new operating rule requires "political approval in Canada...completion of environmental impact studies and Congressional approval of appropriate implementing legislation in the United States" (Smith, 1975, pp. 6-7). Enabling legislation drafted by the U.S. Army Corps of Engineers which authorizes the IJC to permanently use the new regulation objective is now being considered by the Office of Management and Budget (OMB) on behalf of the President. As of October 1, 1975, this legislation is not available to the public. Since legislation has received conditional support from the Great Lakes area Congressmen, passage of the bill is possible assuming submission by the Administration.

B. Compensation of Interests Damaged by Further Regulation of the Great Lakes

Legislation now being considered by OMB not only authorizes the IJC to permanently change the Lake Superior operating rule, but probably recognizes

a role for the federal government as well in compensating shore property and other interests damaged by new regulation objectives. The concern for compensation as expressed by individual states and the Great Lakes Basin Commission primarily stems from two sources--citizen demands for indemnity of past damages and recognition of the potential for future losses, particularly on Lake Superior. This concern of the states, in addition to the IJC's position, has attracted the attention of the United States government to the issue of compensating those injured by new regulation plans. Furthermore, the likelihood of future civil actions seeking both injunctions against implementing any new operating objectives and the payment of damages may give the federal government added impetus to address compensation. But OMB will likely be concerned with the difficulties and expense of determining an equitable amount of compensation and administering the claims.

A primary concern of Lake Superior shore property owners is compensation for damages caused since February 1, 1973, when the International Lake Superior Board of Control stopped using the former operating rule. Modification of Lake Superior outflows between February and August 1973 increased the levels of Lake Superior eight inches over what they would have been under the previous operating rule. This action by the IJC during that period alone caused an estimated $5-$6.5 million damage to Lake Superior shore property and a $200,000 loss to two power companies on the St. Mary's River (U.S. House, Status Report, 1973, pp. 26, 31). A group of property owners on the south shore of Lake Superior have filed suit seeking indemnity for erosion and flooding losses which have occurred since February 1, 1973 (Soucheray et al. versus U.S. Army). Thus, regardless of future losses from changes in the Lake Superior operating objectives, damages have already occurred.

A second concern of Wisconsin, Minnesota, and Michigan is that nearly all of the estimated annual average losses from the proposed regulation plan, SO-901, occur on Lake Superior. Implementation of SO-901 would cause at least the following annual average losses over the 50-year project period at a 7% discount rate:

a) $124,000 to Lake Superior shore property interests. Nearly all of this total ($109,000) would result from erosion and inundation damages on the United States side. The IGLLB estimated that between $22,000 and $33,000 of average annual damages would result from erosion along Wisconsin's erodible Lake Superior shore (IGLLB, Main Report, 1973, p. 131).

b) $160,000 to the Upper Michigan power system.

c) $43,000 to United States shore property on Lake Ontario from erosion and inundation.

Furthermore, the estimates of damages from SO-901 to Lake Superior interests using the Basis-of-Comparison levels may be too low. For example, 10 simulated data sequences indicate a wide range ($0.1-$2.3 million) of possible average annual damages to Lake Superior shore interests (IGLLB, Main Report, 1973, p. 136). On Lake Ontario the economic effect of SO-901 to shore property interests could range from $-600,000 to $600,000. Although these estimates are based upon generalized loss curves and not detailed evaluations, they demonstrate the uncertainty of the damage estimates.

Congress may completely avoid the issue of compensation for future damages, if SO-901 is not permanently implemented. Modifications of Plan SO-901 designated as Mod 7 and Mod 8 benefit power interests, shore property and

navigation on all lakes according to generalized loss functions. Use of these alternate plans would appear to lessen the probability of compensation for future damages. Plan SEO-17P may reduce erosion and inundation damages to Lake Superior shore property owners while increasing these losses to Lake Ontario residents. These three alternate plans may limit the concern for compensating Lake Superior interests for those damages which have not yet occurred. However, if the range in possible supplies is considered, as with the ten simulations under SO-901, these plans may also result in a loss to Lake Superior interests depending upon future climatic conditions. The possible range in supplies is an occurrence that has not been examined.

The degree to which the United States government addresses the issue of compensation will depend largely upon the extent of political pressure applied by those interests damaged by a new regulation plan. Congress failed to pass a bill introduced in 1973 by Representative John Blatnik (D.-Minn.) which proposed that the Corps of Engineers undertake measures including structural or monetary compensation, to offset the damages caused by any governmental regulation of lake levels (H.R. 9737, 93rd Congress, 1st Session). Legislation now under review by OMB for the President probably contains a similar provision if the cost of determining indemnity is not prohibitive.

Although there are difficulties with a compensation program, precedents for validating and paying damage claims of shore property owners allegedly harmed by the regulation of boundary water levels do exist and illustrate possible compensation mechanisms. The procedure used by the United States to settle the Lake of the Woods damage claims could apply to determining losses to riparian owners on Lakes Superior and Ontario. In 1926, upon the recommendation of the IJC, Congress authorized the Corps of Engineers to solicit

damage claims and determine the losses from lake level regulation occurring prior to the 1925 Lake of the Woods Treaty. Claims for all damages including flooding and erosion totalled $838,000. These claims consisted of many different types of losses--erosion, damage to flooded crops, poor soil drainage, etc. The Corps did not validate most of the damage claims because the claimants often failed to substantiate title to the land, inadequately documented the loss, and so forth (U.S. War Department, Damage Claims, 1937 and Past Damage Claims, 1931). When the claimants learned that the Corps' investigation was substantiating only about 10% of their claims, they sought legislation allowing them recourse in Minnesota courts if they contested the Corps' findings. Since Congress wanted to control the final indemnification awards, the bill was defeated (U.S. House, Hearings on H.R. 5051, 1931).

To substantiate those claims involving erosion from 1927-1931 the Corps surveyed the Lake of the Woods and Rainy River shorelines subject to erosion and calculated the annual recession rates for different water levels. Using their survey data, older maps, land descriptions, and interviews with the property owners, the Corps estimated the percentage of erosion occurring during the claimant's ownership. Most notably, the Corps derived the percentage of erosion caused by regulation versus that attributable to natural causes; this percentage varied from 0 to 100% with 50% an often used figure (U.S.War Department, Damage Claims and Past Damage Claims). The claimants were given 30 days to contest the Corps' preliminary estimates at a formal hearing.

From a total of $838,000 in claims the Corps recommended that Congress appropriate approximately $73,000 (U.S. House, Report to accompany S.J. Res. 124, 1932). Although the Corps completed the study in December 1931, Congress delayed the appropriation until August 1937 and then instructed the Corps to pay the claimants (P.L. 75-390). The cost to the federal government of

validating the damage claims probably exceeded the actual indemnity awards (U.S. House, Hearings on H.R. 5051, 1931).

Although the Lake of the Woods study is a precedent for determining the damages due to artificial versus natural fluctuations in lake levels, the circumstances of this case differ considerably from the Great Lakes issue. Upon the recommendation of the IJC, Canada and the United States purchased flowage easements up to contour 1064 sea-level datum, or the highest artificial level prior to the 1925 Lake of the Woods Treaty. Federal or state purchase of flowage easements is not contemplated on the Great Lakes. On Lake of the Woods the IJC determined the "natural ordinary high water level" to be elevation 1059; this contour generally distinguished the lakeward edge of land valuation and vegetation. If similar criteria were applied to the current case on Lake Superior, compensation might not be paid for damages unless the levels exceeded 602 feet IGLD. These two major differences, (1) federal purchase of flowage easements to eliminate future claims, and (2) recognition of only those damages occurring when levels exceeded the natural high water mark, lessen the applicability of the Lake of the Woods case to the current issue on Lakes Superior and Ontario. However, the administration of Lake of the Woods damage claims illustrates a procedure which might be applied to the Great Lakes.

The Gut Dam case is another example of how compensation for shore damages might be determined. In 1903, prior to the establishment of the IJC, the United States consented to Canada's construction of the Gut Dam in the St. Lawrence River if Canada paid for any flooding or erosion losses to U.S. riparian owners due to the regulated water levels. Claims resulting from damages during a high water period, 1951-1952, were settled through

arbitration in 1968. After several months of discussion a tribunal composed of Canadian and United States officials ruled that Canada should pay $350,000 to the United States which in turn paid the claimants. In this case the tribunal sidestepped the difficult issue of determining the effect of regulation versus natural damages. Unlike the current issue of indemnity, the Gut Dam case involved damage claims between two countries and Canada had agreed to compensate United States citizens. The case, however, does exemplify the rather arbitrary methods used in deciding damage claim cases.

Although damages from the use of a new operating rule have occurred on Lake Superior and are likely to continue, a major issue which requires clarification is whether compensation will be paid to shore property owners for damages on Lake Superior, although the monthly mean levels do not exceed the 602 feet IGLD limit set by the 1914 Orders of Approval. In its 1973 Emergency Application to the IJC the United States outlined a tentative position which resembles the Lake of the Woods criterion:

> The Government of the United States agrees to deal with claims for losses resulting on either side of the border from the approval of this Application in accordance with applicable principles of United States law and international law, to the extent that such losses result from levels of Lake Superior above the maximum elevation specified in the IJC's Order of May 26, 1914. (U.S. Dept. of State, "Emergency Application," 1973).

Legislation with such a provision might eliminate consideration of compensation for Lake Superior shore property owners, while tendering indemnity to the Upper Michigan power system at Sault Ste. Marie. On the other hand, the IJC has contended that the Boundary Waters Treaty of 1909 requires compensation of interests damaged by changes in operating objectives (IJC, Special Interim Report, 1973, pp. 18-19). This issue requires clarification before agreement upon the need for compensation occurs.

If the federal government recognizes a need for compensating parties injured by changes in an operating rule, as recommended by the IJC, the costs and difficulties of administering the program will become important. Most likely, the legislation will authorize the Corps to determine the validity of damage claims. While the losses to power companies may be calculated relatively easily and accurately, determining the difference between man-induced and natural damages is very difficult--particularly when the previous maximum level will not be exceeded. Wisconsin has begun a study of bluff recession rates to determine "critical erosion" areas, but the program does not yet foresee having an ability to measure the effect of various erosion causes. Nor will the current Corps of Engineers and Wisconsin Department of Natural Resources shore damage survey provide adequate data to address the issue of compensating riparian owners for damages resulting from regulation since February 1, 1973 (Hiltz, 1975). Additional surveys, data collection, and validation of claims will be necessary to determine the amount of compensation.

Estimating the annual average damages from regulation plans is very different from determining the actual damages to a property from regulation. The IGLLB shore property study was primarily interested in determining the relative distribution of benefits and losses from regulation. As discussed in the WRM evaluation of the IGLLB's methods for estimating shore property damage (Working Paper, "Shore Property and Recreation"), uncertainties in the analysis make it very difficult to assess the accuracy of relative damage figures for each lake, let alone each property owner. Since estimates of the average annual losses to Lake Superior shore interests under Plan SO-901 range from $0.1 million to $2.3 million, justification of compensation may depend upon which estimate is chosen (IGLLB, Main Report, 1973, pp. 66, 134, 136).

Considering the complexities of measuring the erosion and inundation losses directly due to regulation for each claimant, the Corps might establish a standard percentage for the amount of damage caused by regulation. Study of recession rates on representative shore types may provide the basis for such a determination. Given the difficulty and expense of determining and administering compensation to numerous riparian owners, Congress may question whether the United States should allocate funds to study compensation for shore property owners who may generally represent a relatively affluent segment of society (Cohen, 1934, p. 214). In addition, debate on the prospective legislation will likely consider whether indemnity will be paid in perpetuity and if compensation in this instance will set a precedent for future damage claims attributable to lake level regulation.

C. Possible Legislation or International Agreements Affecting Regulation of Great Lakes Water Levels

The IGLLB studied only those methods of regulating water levels within the direct jurisdiction of the IJC because the 1964 Reference from both governments limited the study to changes within the Great Lakes Basin (Smith, 1975, p. 4). Thus, the IGLLB lacked the authority to analyze the possibilities of controlling the Chicago and Long Lake-Ogoki diversions in concert with water levels on the lakes. Another limitation placed upon the IGLLB study was the acceptance of the 1958-D operating rule for Lake Ontario. Because the IGLLB study accepted the diversions as fixed quantities and the 1958-D operating rule without adjustment, the study's results could change if Canada and the United States modify these constraints.

Chicago Diversion. Presently, the diversion from Lake Michigan through the Chicago Sanitary and Ship Canal is limited to an average of 3,200 cfs during

a 5-year period and a maximum of 3,520 cfs during any annual accounting period. This limitation is in accordance with the U.S. Supreme Court decree issued in 1967, in the case of Wisconsin v. Illinois, 388 U.S. 426 (1968). This limitation can be altered either by modification of the Court's decree or by Congressional legislation. Since the Court has retained jurisdiction over this matter, it can amend the decree upon the request for modification by any of the states involved in the suit.

In the past, Congress has made numerous unsuccessful attempts to enact legislation dealing with the Chicago diversion. In 1959 Congress passed a bill introduced by the late Senator Everitt Dirksen (R.-Ill.) and others which authorized for one year an increased diversion of 2,500 cfs from Lake Michigan into the Illinois waterway (S. 308 on H.R.1., 86th Congress, 1st Session). The Corps was to study the impact of the additional flow on the waterway. Two Canadian aide-memoire and notes (spring 1959) opposing the increased diversion may have swayed President Eisenhower to veto the bill. Legislation now pending before the House of Representatives would provide for the diversion of an annual average of 10,000 cfs and an instantaneous maximum of 11,000 cfs from Lake Michigan into the Illinois Waterway (H.R. 12744, 93rd Congress, Second Session). The Chief of Engineers, Department of the Army, would control and supervise the diversion. The bill also provides (1) that whenever flooding exists or is threatened in the Illinois Waterway or rivers downstream, then the rate of diversion shall be reduced to 3,200 cfs; (2) diversion shall not exceed 3,200 cfs when the level of Lake Michigan has fallen to or is below the average monthly level since 1860; (3) the Corps of Engineers shall study the feasibility of increasing the maximum rate of diversion by expanding the capacity of the Illinois Waterway to carry water.

This bill is supported by individuals and municipalities suffering from erosion damage on the Lakes Michigan-Huron shoreline, by the City of Chicago, and also by the Northeastern Illinois Planning Commission, but farming organizations along the Illinois River oppose the legislation. In its testimony before the IJC public hearing held in Chicago November 19, 1974, the planning commission criticized the IGLLB for not considering an increased Chicago diversion in its report. Interestingly, this commission then stated that its main concern was an increase in domestic pumpage and that a 500 cfs increase in the diversion by Illinois would have only minimal effects on Great Lakes water levels. Drainage and levee districts along the Illinois River oppose increases in the Chicago diversion contending that additional water would increase their pumping costs, erode levees and river banks, and augment the dangers of flooding (U.S. House, Status Report, 1973).

Historically, the Canadian government has opposed any further unilateral diversions at Chicago. Canada has stated its position with regard to this matter in five aide-memoire and notes dated January 6, 1958, February 20, 1959, April 9, 1959, November 2, 1961, and June 10, 1964. Canadian opposition is also found in earlier notes dated April 22, 1921, February 24, 1925, and September 15, 1925. Canada contends that unilateral diversions of water out of the Great Lakes Basin watershed are:

1) incompatible with the Niagara Treaty of 1950,
2) incompatible with the arrangements for the St. Lawrence Seaway and power development,
3) prejudicial to navigation and power development that these treaties were designed to improve and facilitate, and
4) a potential violation of Article II, paragraph 2 of the Boundary Waters Treaty of 1909.

While it is true that Lake Michigan does not fall within the definition of boundary waters as defined by the Treaty of 1909 and therefore does not fall within the jurisdiction of the IJC, Secretary of State Elihu Root in testimony before the Senate Committee on Foreign Relations on January 20, 1909 stated:

> The last paragraph of Article II reserves our right to object to any interference with or diversions of waters on the other side of the boundary, the effect of which would be productive of material injury to the navigation interests on its own side of the boundary.

Canada argues that since Lakes Michigan and Huron are physically connected, Root's interpretation of Article II allows Canada to object to any diversion detrimental to navigation interests in Canadian waters.

Even if an extreme high water situation exists on the lower Great Lakes, it is unlikely that Canada will alter its traditional attitude and thereby set a precedent which may be regretted at a later date. The Canadian government will probably be extremely wary of any proposal to increase domestic pumpage for the Chicago area. Once these Illinois municipalities become accustomed to using this additional water, it will be politically difficult to reduce such use when low water levels occur. The Chicago diversion is further discussed in the Hydrology Working Paper, section XI.

Long Lake and Ogoki Diversions. The water levels of the Great Lakes are also affected by the amount of water entering Lake Superior from the Hudson Bay watershed through the Canadian Long Lake and Ogoki diversions. The maximum annual (1939-1970) mean diversion through both of these projects was 8,014 cfs in 1969 (GLBC, Framework Study, Appendix 11, 1975, p. 203). This diversion is presently governed by an Exchange of Notes Agreement between

the governments of the United States and Canada (Notes dated October 14 and 31, and November 7, 1940). This Agreement replaced the provisions of the 1909 Boundary Waters Treaty, and therefore the diversion does not fall within the jurisdiction of the International Joint Commission. The Agreement was made in consideration of Canada's need for power during war times pending eventual conclusion of the Great Lakes-St. Lawrence Agreement of March 19, 1941 (Whiteman, 1964, p. 809). Under this Agreement the U.S. State Department permitted the Province of Ontario to use additional waters for power at Niagara Falls, equivalent in quantity to the diversions into Lake Superior from the Albany River Basin (Whiteman, 1964, p. 809). The Niagara River Treaty signed on February 27, 1950 states that the diversion shall continue to be governed by the Exchange of Notes. On November 4, 1952 the Canadian Ambassador advised the U.S. Secretary of State that the Canadians did not intend to take any action to ratify the 1941 Agreement, nor had the U.S. Congress given approval; therefore, the Agreement was never enacted (Whiteman, 1964, p. 810). Although the Long Lake and Ogoki diversions do not have a definite maximum limit, permission to alter this diversion for the purpose of reducing the variance of lake levels would require a new agreement between the United States and Canada. Canada is not likely to support a variable diversion plan that would harm the interests of the Hydroelectric Power Commission of Ontario. The Long Lake-Ogoki diversions are further discussed in the Hydrology Working Paper, section XI.

St. Lawrence River. Increasing the maximum amount of water leaving the Great Lakes system through the St. Lawrence River would involve changing the 1958-D operating rule for Lake Ontario. The IJC approved certain criteria

for the regulation of Lake Ontario in its July 2, 1956 Order (see INSTITUTIONS, pp. 73-74). Modifying the stated objectives or criteria would require an amendment to the Order which could be accomplished either by submission to the IJC of an application under Article III of the Boundary Waters Treaty by either government or by an agreement between the two countries (Article XIII). Due to the elevation gradient at Niagara Falls a change in the regulation rule for Lake Ontario would not affect the levels of Lakes Superior and Michigan, unless the discharge capacity of Lake Erie was modified accordingly.

The 1958-D operating rule could not accommodate the record high supplies into Lake Ontario in 1972 and 1973, and therefore emergency modifications of the plan were necessary to reduce flooding damages on that lake (IGLLB, Main Report, 1973, p. 236). Currently, the Canadian Section of the St. Lawrence River Board of Control is studying the feasibility of revising this operating rule--particularly the impacts of increasing the maximum discharge through the St. Lawrence River.

Welland Canal. The amount of water diverted from Lake Erie through the Welland Ship Canal is controlled by the St. Lawrence Seaway Authority of Canada and established through agreements between the two governments (GLBC, Framework Study, Appendix 11, 1975, p. 155; Willoughby, 1961, p. 129). The discharge through the Welland Canal has averaged about 7,290 cfs from 1959-1968 and lowered the level of Lake Erie 0.32 feet. Changing the flow through the canal would require a new agreement between the United States and Canada.

V. REGULATION OF GREAT LAKES WATER LEVELS: THE ROLE OF WISCONSIN'S COASTAL ZONE MANAGEMENT DEVELOPMENT PROGRAM (CZDMP)

Introduction

The Wisconsin Governor's office is relying upon the State Coastal Zone Management Development Program to help determine Wisconsin's position on the regulation of Great Lakes water levels. Some aspects emphasized in the CZMDP were given little emphasis by the International Great Lakes Levels Board in recommending a new regulation plan for the Great Lakes. These aspects include an increased emphasis on ecological values in the coastal zone, intergovernmental coordination, and citizen involvement. Wisconsin's recommendation to the IJC can be expected to reflect these concerns.

Background

After the IGLLB report was completed in December 1973, the IJC held a series of hearings on the report and its recommendations during the following year. Until this time the states were not included in the determination of the IGLLB recommendations except for reviewing the shore damage methodology in the early stages of the study (Graves, 1973). In the fall of 1974, Wisconsin's Department of Natural Resources reluctantly accepted implementation of the proposed Plan SO-901 as long as compensation was provided for shore losses due to regulation (Wisconsin DNR, 1974). Many Lake Superior shore property owners and officials of local governments harmed by the high water levels urged the Governor to retract the DNR position until a more careful analysis of the IGLLB report was made. Wisconsin presently lacks a formal policy on Great Lakes levels regulation. Such a policy, when developed, must account for the concerns of both Lake Superior and Lake Michigan interests.

In January 1975 an ad hoc Committee on Great Lakes Water Levels was formed under the state CZMDP. Under this committee, composed of state and regional agencies and University personnel, the IGLLB report is being analyzed and a state position on Great Lakes levels regulation is being developed. The ad hoc committee is divided into seven subgroups investigating specific aspects of the IGLLB report including shore erosion, navigation, power, water quality/habitats, recreation, and hydrology/engineering. The Water Resources Management Workshop of the University of Wisconsin-Madison cooperated with the state by providing its broad working paper to the state government and its staff structure for their consideration.

The Coastal Zone Management Act of 1972 (P.L. 92-583)

The Coastal Zone Management Act (CZMA) of 1972 initially began in 1965 as an attempt to protect Long Island wetlands and, after seven years of Congressional debate, was approved as a national program in "the effective management, beneficial use, protection, and development of the coastal zone." The Act recognizes (1) the richness of the natural, commercial, recreational, industrial resources of the coastal zone, (2) increasing competing demands upon the limited coastal resources, (3) the ecological fragility of the living resources of the coastal zone, (4) the importance of ecological, cultural, historic and aesthetic values which are being irretrievably damaged or lost, (5) the harmful effects of ill-planned development, (6) the inadequacy of present state and local institutions in meeting "the urgent need to protect and give high priority to natural systems in the coastal zone," and (7) the need to encourage states to exercise their full authority in developing "effective protection and use of land and water resources" (U.S. P.L 92-583, (Sec. 302). Because the definition of "coastal zone" includes the shorelands

of the Great Lakes in addition to the coastal areas of the Atlantic, Pacific and the Gulf of Mexico, Wisconsin is considered a coastal zone state (U.S. P.L. 92-583, Sec. 304(a)).

While the Act states that it shall not be construed to "affect the jurisdiction, powers, or prerogatives of the International Joint Commission" (U.S. P.L. 92-583, Sec. 307(e)(2)), the policies established by the Act can indirectly affect the procedures and priorities used by the U.S. Section of the IJC. For example, the emphasis on the state's role in developing and implementing coastal zone management programs and the emphasis on intergovernmental cooperation suggest that Great Lakes states should have a substantially increased role in the development and selection of international programs which affect the coastal zone. Likewise, the concern for environmental values and ecological fragility expressed in the Act is likely to encourage the IJC to consider the broad environmental effects of its activities in addition to the Boundary Waters Treaty's emphasis on domestic and sanitary uses, navigation and power (Article VIII). Public participation is another essential element of coastal zone management programs. Public pressures for more openness and public involvement in IJC activities may be expected. In addition, the CZMA is in some ways more extensive than the Boundary Waters Treaty because the CZMA affects both land and water use planning, while the IJC is restricted to water uses.

Major allocations under the Coastal Zone Management Act are provided under Section 305 (Management Program Development Grants) and Section 306 (Administrative Grants). Up to two-thirds federal funding is available under these sections for developing and administering state coastal zone management programs so long as certain criteria are met. Section 305 grants are available

for no more than three years for a program which must address these problem areas: identification of coastal zone boundaries, definition of permissible land and water uses, inventory and designation of areas of particular concern, identification of means of state control over land and water uses, guidelines on priorities of specific uses in particular areas, and description of proposed structure of program implementation. Section 306 requires that a state have one of three organizational structures for implementations: (1) direct state regulation, (2) local enforcement of state standards, or (3) state review of local decisions. Wisconsin is in its second year of program development under Section 305 and has not committed itself to implementation under Section 306.

Wisconsin's Coastal Zone Management Development Program

The structure of Wisconsin's CZMDP is outlined in the state's first and second year grant applications to the National Oceanic and Atmospheric Administration. Ten major issues of the coastal zone are discussed in the initial grant application (Wisconsin DOA, 1974, pp. 8-16). Two of these issues, erosion and flooding, are directly related to Great Lakes levels regulation while others (such as port development, recreation and encroachment on ecologically sensitive areas) are indirectly related. The initial grant application also identifies six general "problem areas" involved in the state's attempt to resolve the ten coastal zone issues: (1) definition, concerns, priorities and controls of uses in the coastal zone; (2) establishment of area boundaries; (3) adequate intergovernmental and interagency coordinative and participatory mechanisms; (4) governmental powers and authorities; (5) public participation and information; and (6) management policy (Wisconsin DOA, 1974, p. 16). The WRM Workshop analysis of the data, methods and conclusions of the IGLLB is identified as one of six policy papers which make up the

"management policy" problem area. Development of a state policy on Great Lakes levels regulation was not included in the CZMDP until early in 1975, after the release of the IGLLB report and the IJC hearings made clear the need for a state policy.

The second year grant application points out the role of policy studies:

> (A policy study) provides professional analysis of data and statewide perspective of existing policy and alternative future courses of action... In all cases, existing public policy will be clearly stated in reports prepared for general dissemination. Each policy study is directed by one or more state agencies with concurrent comment and direction by a review panel representing other state agencies with statutory involvement, academic researchers, and knowledgeable citizens. Periodic review by the Coastal Zone Staffs Group has assured continuity with program objectives and input by the lead agency and regional planning commissions. The Coordinating and Advisory Council, the Citizens Advisory Committee and regional advisory bodies serve as additional review bodies during the studies (p. 7).

The second year grant application suggests that the Great Lakes Basin Commission should have a greater interstate role in the lake levels issue (Wisconsin DOA, 1975, p. 7). The GLBC is the only interstate unit in which all states bordering the Great Lakes as well as those federal agencies with on-going programs in the Great Lakes are members on an equal partner basis. Such an arrangement provides for the flow of technical and regulatory information among state and federal levels of government. The GLBC can also serve as a single unit for the coordination of federal activities and the establishment of interstate agreements for planning and management. The GLBC Standing Committee on Coastal Zone Programs can be especially useful for such purposes. In addition, the majority of Great Lake states have each transferred $1,500 of their Coastal Zone grant funds to help fund a GLBC staff position to corrdinate interstate activities.

At the time that the IGLLB report was being released, the GLBC established an ad hoc committee to review the main report and those appendicies available at the time (B,D,E, and G). Included on the ad hoc committee were representatives of Wisconsin Department of Natural Resources, Pennsylvania Department of Environmental Resources, New York Department of Environmental Conservation, Ohio Department of Natural Resources, U.S. Environmental Protection Agency, Michigan Department of Natural Resources, Army Corps of Engineers, Minnesota Department of Conservation, and the National Oceanic and Atmospheric Administration. The ad hoc committee developed ten recommendations: (1) acquisition of additional data for more accurate and timely evaluation of management alternatives, (2) further study of regulation of Lakes Erie and Ontario, (3) implementation of Plan SO-901 providing that adequate compensation is provided, (4) studies of existing diversions, (5) study of removal of physical constraints in the St. Lawrence River, (6) consideration of the effects of lake level regulation on water quality, (7) additional consideration of the effects on wetlands and estuarine areas, (8) inclusion of requirements for deep-craft navigation in future regulation plans for Lakes Michigan and Huron, (9) inclusion of meteorological and water quality parameters in hydrologic monitoring networks, and (10) support of improved land use regulations in shoreland areas (see Appendix E, pp. 76-77).

The state CZMDP also provides for greater intrastate involvement in the lake levels issue so that regional, local and citizen concerns may be included in the development of a state policy. A number of technical coordinating committees and citizen advisory councils have been established for this purpose. A Regional Coastal Zone Coordinating and Advisory Council has been established in each of the three regional planning commission areas which include Wisconsin's coastal zone. These councils, consisting of local officials,

citizens and local experts, serve as the regional coordinators and reviewers of the state CZMDP by providing regional variations and input to state policies and programs. On the state level there are also a Coastal Zone Coordinating and Advisory Council as well as a Citizens Advisory Committee established to increase information flow, coordinate activities and assist in establishing goals and policies for the CZMDP (Wisconsin DOA, 1974, p. 51).

Finally, the strong environmental orientation of Wisconsin's CZMDP can be expected to affect the state's response to the IGLLB report. For example, encouragement of nonstructural approaches to shoreline protection (such as land use controls) can be expected rather than promotion of construction of shore protective structures. In this regard, coordination between the IJC and the state would be useful so that such controls can allow for the effects of regulation in the future. In addition, recommendations for further study of the ecological effects of lake level regulation can be expected so that a better understanding of the extent and permanence of impact on fish populations and on habitat adjustment can be achieved.

VI. INSTITUTIONS INVOLVED IN THE GREAT LAKES BASIN RELATING TO LAKE LEVELS: THEIR STRUCTURE, POWER AND PERFORMANCE

A. International Institutions

International Joint Commission (IJC)

The International Joint Commission is a bilateral, permanent body between the United States and Canada, established to carry out the purposes of the Boundary Waters Treaty of 1909. The IJC consists of six members, three from each country. The United States Commissioners are appointed by and serve at the pleasure of the President of the United States, without Senate confirmation (Boundary Waters Treaty, Article VII). The Canadian Commissioners are appointed by Order In Council of the Canadian government and serve at the pleasure of the Canadian government. All decisions of the IJC are made by majority rule.

The 1909 Treaty gives the IJC responsibility in two general categories:

a) The first of these responsibilities is to approve or disapprove of all proposals for use, obstruction, or diversion of boundary waters on either side of the boundary which would affect the natural level or flow of the boundary waters on the other side. All of the Great Lakes, except Lake Michigan, and their connecting channels are boundary waters as defined in the Treaty. All project proposals are brought before the IJC by what are termed "applications," filed by the interested public agencies or private corporations or individuals. The burden is on the applicant to furnish all necessary information and data that is required. Interested persons may intervene in support of or in opposition to the application. This is followed by public hearings after which the IJC issues an Order,

TABLE 1. INSTITUTIONS INVOLVED IN THE GREAT LAKES BASIN

International Institution - International Joint Commission
- International Lake Superior Board of Control
- International Niagara Board of Control
- International St. Lawrence River Board of Control
- International Great Lakes Levels Board
  - Army Corps of Engineers
  - Department of Transportation
  - Department of Interior

Federal Institutions - Executive Branch
- Department of Agriculture
  Soil Conservation Service, Forest Service
  Economic Research Service
- Department of Commerce
  Maritime Administration, National Oceanic and Atmospheric Administration
- Department of Housing and Urban Development
- Department of the Interior
  Bureau of Outdoor Recreation, Bureau of Sport Fisheries and Wildlife, U.S. Geological Survey, Bureau of Commercial Fisheries, Bureau of Mines
- Department of Justice
- Department of Transportion
- Department of State
- Department of Defense (Army Corps of Engineers)
- Environmental Protection Agency
- Federal Power Commission
- Nuclear Regulatory Commission
- Office of Management and Budget

Legislative Branch
- Committee on Public Works
- Committee on Foreign Relations
- Great Lakes States Delegation (informal body)

Intra-Federal Institutions - Water Resources Council

Federal-State Institutions - Great Lakes Basin Commission
Upper Great Lakes Regional Commission

Interstate Institutions - Great Lakes Commission (compact)

States - Illinois
Indiana
Michigan
Minnesota
New York
Ohio
Pennsylvania
Wisconsin

TABLE 1 (continued)

Substate Wisconsin	- Bay-Lake Regional Planning Commission - Northwestern Wisconsin Regional Planning & Development Commission - Southeastern Wisconsin Regional Planning Commission
Private Interest Groups	- Power - Navigation - Environmental - Shoreline Riparian Owners - Recreation - Industrial

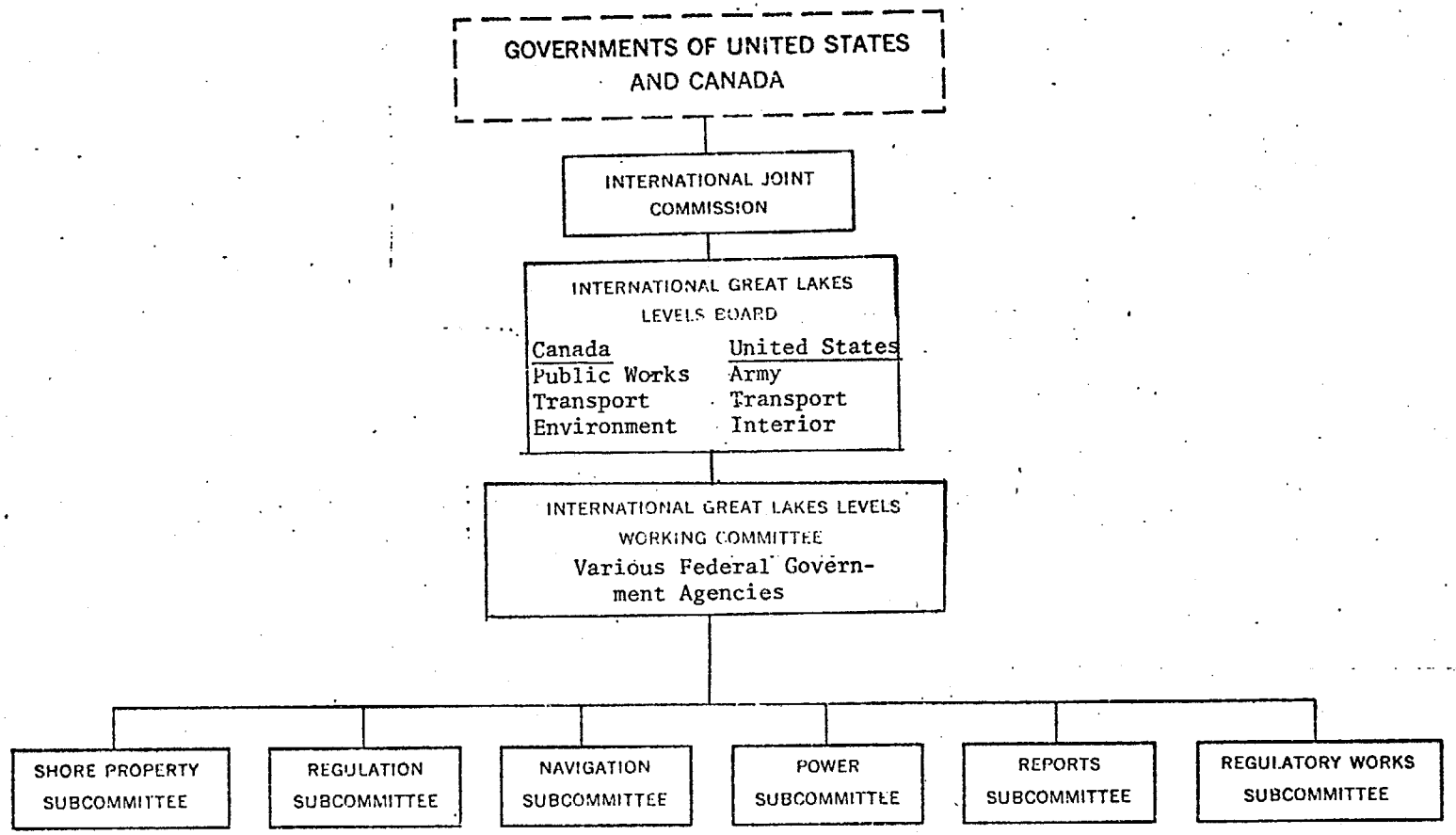

Figure 1. Structure of Study Organization

which determines if the application is to be granted or not. The decision of the IJC is final, and not subject to appeal (Boundary Waters Treaty, Articles III and IV).

b) The second general responsibility of the IJC is to investigate and make recommendations on specific problems along the common frontier referred to it by either or both governments. These investigatory requests are termed "references." In these cases, the IJC appoints an international technical board consisting of qualified personnel from both countries to organize and coordinate the fieldwork and technical studies that may be required. Much of the investigatory work is done by various governmental agencies, under the general coordination and direction of the international board. The board keeps the IJC informed of its activities by frequent progress reports, and, upon completion of its study, files a final report. After releasing the report for study by all interested persons and organizations in both countries, the IJC holds public hearings at which time all interests have an opportunity to produce evidence and express opinions on the report or on any other aspect of the problem. The IJC then prepares its own report and recommendations, and sends them to the two governments. Neither government is bound, in any way, to the final report and recommendations of the IJC (Boundary Waters Treaty, Article IV).

The IJC is severely limited in its authority, due to the essentially reactive powers that it was given under the Treaty. It lacks authority to act until either (1) an application for approval of works or (2) a reference from one or both governments to investigate a problem area is received. Upon receiving an application the decision of the IJC on

that matter is final. In the case of references, the IJC is further limited: a) Due to its reactive role, the IJC has no control over the timing, extent or nature of the investigations which it undertakes--these are all spelled out in the reference. b) After the IJC establishes an international board to conduct an investigation, the IJC appears to assert limited practical direction over the focus of investigation. The IJC itself has only a modest professional staff and the working participants in the international board structure are drawn from the several United States and Canadian agencies that have professional competence within the area of inquiry. Thus the investigation and report of these international boards tend to be influenced by the parent agencies' experience as reflected in the work of their personnel who are serving the IJC only on a temporary basis. c) Neither government is bound by the final report or recommendations of the IJC. Thus the IJC is solely dependent upon the powers of persuasion, with regard to its recommendations to the governments. d) Even if the recommendations are "adopted" by the governments, in the absence of legislative enactments to carry out the recommendations, the implementation and enforcement of these recommendations remain academic (Dworsky and Francis, 1973, pp. 29-32).

Under the powers granted to the IJC by the Boundary Treaty, various international technical boards have been established that are directly concerned with the lake levels and flows within the Great Lakes Basin. Among these are:

(1) International Lake Superior Board of Control (ILSBC)

This Board was established after the Orders of 1914 growing out of an application being submitted to the IJC for the construction

of a dam across the St. Mary's River at Sault Ste. Marie. Upon granting approval of the application, the IJC established the ILSBC. The purpose of the ILSBC was to regulate and maintain the water levels and outflows of Lake Superior within a specified range. Technical studies on Lake Superior are under the direct supervision of the ILSBC. The ILSBC periodically sends reports to the IJC regarding the operation of the regulatory works. Any disagreements of the ILSBC are referred to the IJC for decision. Presently, the ILSBC consists of an officer appointed by the Canadian government and an officer of the United States Corps of Engineers (Bloomfield and Fitzgerald, 1958, p. 84).

(2) International Niagard Board of Control (INBC)

This Board was established in 1953 after the IJC had recommended its establishment to both governments. This recommendation came as a result of a reference that had been submitted to the IJC by both governments requesting the IJC to investigate and report on the design and cost of remedial works required to carry out the provisions of the Niagara Diversion Treaty of 1950. Upon approval of this recommendation by both governments, the INBC was established. The purpose of the INBC is to ensure that the provisions of the Niagara Diversion Treaty are complied with. It supervises the operation of the Niagara remedial works and diversions to allow for maximum power diversions around the Falls while maintaining Lake Erie water levels and treaty flows over the Falls for scenic purposes (Bloomfield and Fitzgerald, 1958, pp. 188-189).

(3) International St. Lawrence River Board of Control (ISLRBC)

This Board was established in 1953 as the result of an application being submitted to the IJC by both governments for the construction and operation of certain works for the development of power in the International Section of the St. Lawrence River. After granting approval of the application the IJC established the ISRBC. The purpose of the ISRBC is to ensure that the provisions of the Order relating to specified water levels and regulation of discharge from Lake Ontario, and the flow through the International Rapids Section of the St. Lawrence River are complied with. Technical studies on Lake Ontario and the International St. Lawrence River are under the direct supervision of the ISLRBC. Any disagreements of the ISLRBC are referred to the IJC for decision (Bloomfield and Fitzgerald, 1958, pp. 200-201).

(4) International Great Lakes Levels Board (IGLLB)

This investigative board was established in 1964 by the IJC as a result of a reference submitted to the IJC from both governments requesting an investigation into further regulation of the water levels of the Great Lakes, in hopes of reducing the extreme fluctuations of the water levels. The IGLLB was given the task to find out all factors which affect the water levels in the Great Lakes. It was then to work out ways of controlling these levels. Investigation was to include the consideration of new ideas and a review of existing methods. It was to estimate costs of putting these various ideas into operation and to assess the probable

effects of the resulting hydrological, economic, environmental, and aesthetic changes, both beneficial and adverse, that these means might cause.

The IGLLB consisted of a United States and a Canadian Section. The United States Section is composed of a representative from the Army Corps of Engineers, the Department of the Interior, and the Department of Transportation. In October 1964, the IGLLB appointed a Working Committee to prepare the necessary data and studies. Soon thereafter, this Working Committee appointed three subcommittees to determine the effect of various regulations on shore property, power and navigation and fourth subcommittee to develop the various regulation responsible for carrying out the necessary studies of the regulatory works that could be required for the various plans of regulation. Finally, in June 1968 a Reports Subcommittee was appointed and given the responsibility for preparing the final report. This report was completed in late 1973 and is currently under review and study by the IJC.

It should be noted that the Army Corps of Engineers played a prominent role in the preparation of this report. The Chief Engineer of the Corps of Engineers (Chicago District) was the chairman of the IGLLB. In addition, as is the practice of these investigatory, technical boards, the investigatory work was done by various federal governmental agencies, with the Corps of Engineers assuming responsibility for most of the technical studies. Approximately two hundred people, at one time or another, were involved in the study. Conspicuously absent from these working subcommittees were representatives from various agencies of the eight Great Lakes states (Water Resources Management Workshop, 1975)

The investigatory studies undertaken by the IGLLB were limited. Under the terms of the "reference" submitted by the two governments, the diverions (Long Lake-Ogoki and Chicago) within the Great Lakes Basin were to be excluded from the investigation. Under the "directives" given to the IGLLB from the IJC, the IGLLB could not expand its investigations beyond that which had been set forth by the IJC, unless it was approved by the IJC. Also, within these guidelines, public participation and public disclosure were virtually eliminated from the investigations. The IGLLB was to send semi-annual reports of its investigations solely to the IJC, members of the IGLLB and its various subcommittees, and governmental officials concerned with the study. The IGLLB was also authorized not to make public nor to publicize any of its proceedings. In addition, the IGLLB was not authorized to conduct any public hearings on its own. Public hearings that were held were to be solely under the authorization and direction of the IJC (IGLLB, Main Report, 1973, pp. 253-255).

B. Federal Institutions

A number of federal government agencies are involved in planning and management in the Great Lakes region, due to their statutory responsibilities. These various institutions will be briefly mentioned. In the Executive Branch there is:

(1) Department of Agriculture - The USDA investigates agricultural, rural and upstream waters and related land resource problems. The water resource planning and evelopment activities of the USDA are carried out principally through the Soil Conservation Service, the Forest Service and the Economic Research Service.

(2) Department of Commerce - The main purpose of the USCD in the Great Lakes Basin is to promote industry and commerce within the area. The Maritime Administration is placed under the jurisdiction of the USDC which has responsibility for promoting the development of U.S. ports and related transportation facilities in connection with waterborne commerce. Also, the National Oceanic and Atmospheric Administration is located within the USDC, which has numerous agencies with functions relevant to the Great Lakes.

(3) Department of Health, Education and Welfare - The main concern of HEW in the Great Lakes Basin is in the area of public health, dealing with such things as recreation sanitation, drinking water supply, health ecology, etc. The Public Health Service is the principal agency of HEW involved in these matters.

(4) Department of Housing and Urban Development - The main concern of HUD is with housing and urban problems, which include assistance for local communities, local public bodies and agencies to plan and finance the cost of acquisition, improvement, and construction of nonfederal public works and facilities. In addition, HUD administers the National Flood Insurance Program which addresses floodplain and erosion area planning and management on U.S. Great Lakes shorelands.

(5) Department of the Interior - The activities of the DOI are conducted by a number of semiautonamous bureaus and agencies, some of which are the Bureaus of: Commercial Fisheries, Mines, Outdoor Recreation, Sport Fisheries and Wildlife, and U.S. Geological Survey. These various agencies deal with a multitude of resource related problems and issues in the Great Lakes Basin.

(6) Department of Justice - Any legal issues and problems that arise in the workings of the federal government in the Great Lakes Basin will be taken up within the Justice Department.

(7) Department of Transportation - Within this Department are two important institutions with regard to the Great Lakes. The U.S. Coast Guard provides for the safety of shipping, lives, and property on the Great Lakes. The St. Lawrence Seaway Development Corporation operates and maintains deep-water navigation works in the American sector of the St. Lawrence Seaway, and it also serves as a stimulant to the Great Lakes economy.

(8) Department of State - The main concern of the State Department in the Great Lakes Basin is in the governmental relations between the United States and Canada.

(9) Department of Defense - The main concern of the DOD in the Great Lakes Basin is directly related to the activities of the Army Corps of Engineers, which has been the federal government's principal water resources development agency since 1824. Within the Great Lakes Basin the Corps is engaged in the planning and construction of flood control projects, navigation channels, harbors, and protective works for the prevention of beach and shore erosion.

(10) Environmental Protection Agency - EPA is given the mission of mounting an integrated, coordinated attack on the environmental problems of air and water, pollution, solid wastes managements, pesticides, radiation, and noise. Regional offices are maintained within the Great Lakes Basin area and are concerned with establishing a broad, comprehensive attack on pollution within its area.

(11) Federal Power Commission - The FPC has statutory responsibilities relative to the planning, construction and operation of water resources projects related to the development of power.

(12) Nuclear Regulatory Commission - Since many nuclear power plants are located along the shores of the Great Lakes, the responsibilities of the NRC are to protect the health and safety of the public from these nuclear

activities and to regulate and control the use of special nuclear materials and sources and by products of those materials.

(13) Office of Management and Budget - This is the President's principal executive staff agency. As such it monitors all federal on-going programs. On behalf of the President, OMB holds the power of the purse over all appropriated monies to the various agencies. OMB also screens legislative drafts that may affect any of the agencies within the Executive Branch of government. As such, the OMB is a very powerful force within the Executive Branch of government.

Within Congress are several committees whose activities may greatly affect the Great Lakes Basin area. Some of these various bodies are:

(1) Committee on Public Works - This committee controls the authorizations for federally funded projects. The committee appears to work very closely with the Corps of Engineers. Since substantial amounts of money are involved in these projects, this committee wields a great deal of power in this area.

(2) Committee on Foreign Relations - This committee's concern in the Great Lakes Basin would primarily be in the area of United States-Canadian relations.

(3) Great Lakes States Delegation - This informal delegation is comprised of all the congressional representatives from the Great Lakes States and is extremely concerned with what goes on within the Great Lakes Basin.

C. Intra-Federal Institutions

Water Resources Council (WRC)

The Water Resources Council was established by the Water Resources Planning Act of 1965 (P.L. 89-80), and consists of those departments and independent agencies in the federal government that have the major responsibility for water resources programs throughout the Nation. The purpose of the WRC is to coordinate the various federal policies and programs relating to the Nation's water resources and to develop an

overall planning scheme for the optimal use of the resources. The WRC presently consists of the following members: Secretary of Agriculture, Secretary of the Army, Secretary of Health, Education, and Welfare, Secretary of the Interior, Secretary of Transportation, and Chairman of the Federal Power Commission. The Secretaries of the Departments of Housing and Urban Development and Commerce are associate members, and the Department of Justice, the Office of Management and Budget, and the Environmental Protection Agency furnish observers. The Chairman of the WRC is designated by the President. The effectiveness of the WRC in coordinating the planning for the Nation's water resources depends largely upon its success at balancing the diverse interests of its member agencies.

D. Federal-State Institutions

Great Lakes Basin Commission (GLBC)

The GLBC was established in 1967 by Executive Order of the President, under the terms of Title II of the Water Resources Planning Act of 1965, which grants the President the authority to establish federal-state water basin commissions. Its membership includes a representative of each federal agency judged by the President to have substantial interest in the Commission's activities, a representative from each participating state, and a representative from any interstate compact commission having jurisdiction over the waters of the area.

On the federal level, the GLBC has representatives from the Departments of the Army, Agriculture, Commerce, Health, Education, & Welfare, Housing and Urban Development, Interior, Justice, State, and Transportation

along with representatives from the Environmental Protection Agency, Federal Power Commission, and the Great Lakes Compact Commission. Eight states are represented on the GLBC. These states and their representatives from their respective state agencies are: Illinois (Natural Resources Development Board), Indiana (Department of Natural Resources), Michigan (Department of Natural Resources), Minnesota (State Planning Board), New York (Department of Environmental Conservation), Ohio (Department of Natural Resources), Pennsylvania (Department of Environmental Resources), and Wisconsin (Department of Natural Resources).

The Chairman of the GLBC is appointed by the President, while the Vice-Chairman is elected from among the state representatives. The Chairman also acts as the coordinator of the federal representatives and apeaks for the federal government in any federal/state relations, while the Vice-Chairman acts as the coordinator of the state representatives and speaks for the states in federal/state relations on the GLBC. The Commission operates on a consensus basis; in the absence of complete consensus, full opportunity is given to the representatives to present their views and to have them reported.

The GLBC is assigned to carry out four basic charges:

1) To serve as the principal agency for the coordination of plans for the development of water and related land resources in the region, including federal, state, interstate, local and non-governmental planning.
2) To prepare and keep current a comprehensive, coordinated joint plan for use and development of water and related land resources.

3) To recommend long-range schedules or priorities for data collection and analysis and the planning, design, and construction of projects.

4) To foster and undertake special studies to support (2) above (Water Resources Planning Act of 1965).

Soon after the IJC made public the IGLLB final report, the GLBC established an "Ad Hoc Review Committee" (AHRC) to review this report. The AHRC consisted of representatives from the Environmental Protection Agency, Wisconsin Department of Natural Resources, New York Department of Environmental Conservation, Ohio Department of Natural Resources, Michigan Department of Natural Resources, Army Corps of Engineers, and the Minnesota Department of Conservation. This action was taken in order to permit the GLBC to consider what action it desired to take relative to the conclusions of the IGLLB's final report. The AHRC, after studying this report, developed a set of ten recommendations which were presented to the GLBC. The GLBC, in turn, submitted these recommendations to the IJC with the expressed request that the IJC consider these recommendations when making its own final report and recommendations.

The GLBC was designed and established as a planning and coordinating agency--not as a regulatory agency. It must depend on the cooperation of its members and their willingness to yield some of their independence in order to seek consensus in resolving issues of regional importance. In addition, some general criticisms can be noted concerning basin-type organizations which could apply to the GLBC. 1) Federal partners tend to dominate. 2) Relatively much effort is spent on the preparation of voluminous planning reports. 3) The role of citizen groups and local governments in defining problems and evaluating alternatives is uncertain.

4) There usually is low public visibility in the operation of the commissions. 5) The planning activities tend to be limited by the scope and competence of those agencies participating in the planning exercise (Kelnhofer, 1961; Ostrom, 1970, pp. 160-162).

Upper Great Lakes Regional Commission (UGLRC)

The UGLRC was authorized by Title V of the Public Works and Economic Development Act of 1965 (P.L. 90-17). The UGLRC consists of the Governors of Michigan, Minnesota, and Wisconsin and a federal co-chairman who is appointed by the President. Its main purpose is to provide for economic growth in the Upper Great Lakes region. Program emphasis is placed on tourism, transportation, natural resources, industrial development, and human resources. The limited geographic jurisdiction of the UGLRC and its focus on regional economic development limits its potential utility for planning and management within the Great Lakes Basin (Craine, 1972, II-4).

E. Interstate Institutions

Great Lakes Commission (GLC)

This agency was established in 1955 and eventually approved by the Congress under the Great Lakes Basin Compact, an interstate agreement designating the GLC as a joint State instrumentality on Great Lakes water resource developments, programs, and problems. The GLC is comprised of from three to five representatives from each of the eight member States bordering the Great Lakes. The GLC provides a forum for the interstate discussion of problems relating to the water resources of the Great Lakes Basin. A major function of the GLC is to direct and execute a program of education in support of developmental projects for the St. Lawrence Seaway and the Great Lakes.

This agency is limited in its activities. It receives only a bare minimum of funding from the participating States. In addition, it has no legal authority for planning or management activities within the Great Lakes basin. Thus, the Commission is limited to a role of information gathering and communications among the various States. It also serves as a collective representative of the States on the Great Lakes Basin Commission. The Great Lakes Commission appears to play a limited role in the national and international aspects of the Great Lakes, except for its promotion of navigation in the Great Lakes system (Craine, 1972, III-10).

F. State Institutions

In the Great Lakes Basin, the eight States have had very limited participation in the IGLLB investigation of the regulation of lake levels and flows. For the most part, the major governmental institutions involved in the affairs of the Great Lakes Basin have been the States' respective Conservation and Environmental Resources Agencies. With respect to the IGLLB study, these various agencies were conspicuously absent from the various working subcommittees. Thus, when the IJC brought IGLLB study out for public hearings (which endorsed regulation plan SO-901), the States were largely uniformed when asked to comment.

In the case of Wisconsin, the opinions expressed on the report within the State were mixed. Governor Patrick J. Lucey came to the conclusion that the State was not fully cognisant of the issues and problems involved and he stated that Wisconsin would not offer support unless there was a technical review of the IGLLB study. With this in mind the Office of State Planning, under the auspices of the

Coastal Zone Management Program, entered into an association with the University of Wisconsin-Madison Water Resources Management Program to analyse the IGLLB report to review the implications for Wisconsin. This study was to be coordinated with investigations underway within the Department of Natural Resources.

Besides Wisconsin, the States of Minnesota and Michigan have evidenced the most concern with the IGLLB report. All three States have some territory along Lake Superior, which will have its lake level raised if the regulation plan that was endorsed by the IGLLB (SO-901) is implemented.

G. Substate Wisconsin

Northwestern Wisconsin Regional Planning and Development Commission

This regional planning and development commission represents the ten counties and their local units of government in northwestern Wisconsin. Four of the counties (Douglas, Bayfield, Ashland, and Iron) consitute Wisconsin's Lake Superior coastline. As such, the NWWRP&DC has a strong interest in the wise and beneficial use of the Lake Superior shorelands and its water resources.

Southeastern Wisconsin Regional Planning Commission

This regional planning commission represents seven counties and their local units of government in southeastern Wisconsin. As such, the Commission's concern within the Great Lakes Basin is limited to the activities associated with Lake Michigan.

Bay-Lake Regional Planning Commission

This regional planning commission represents some of the counties and their local units of government that are situated along the Green Bay Basin. As such, the Commission's concern with the Great Lakes is largely focused on the activities associated with Lake Michigan.

H. Private Interest Groups

The regulation of water levels and flows on the Great Lakes will affect a substantial number of individuals, in one way or another. The major interests that are concerned with this issue include commercial shipping interests, shoreline riparian owners, hydro-electric power intersts, fishing inerests, industrial interests, recreation interests, and environmentalists. As can be imagined, there are many organized interest groups centered around these various categories, all with a variety of opinions about how lake levels should be managed. Many of these varied interests were expressed in the IJC public hearings associated with the IGLLB report.

I. Intergovernmental Relations

It becomes apparent that the intergovernmental relationships that abound among the various governmental institutions operating within the Great Lakes Basin represent a formidable governmental maze. The picture becomes all the more complicated when one realizes that governmental relations and interactions take place among the various institutions on a continuing basis. Looking at the various institutional arrangements and governmental participants within the Great Lakes Basin, it appears that the Corps of Engineers is in a highly influential position. As the federal government's principal water resources development agency for the past 150 years, it has gained considerable expertise and political respect. Thus, it has become the "lead agency" and technical expert in the various institutional arrangements that are found within the Great Lakes Basin. The Corps of Engineers has intergovernmental relations with virtually every type of public organization concerned with water

resources. The IJC appears to rely heavily on the expertise of the Corps. Invariably the Corps is included on all of the various investigatory boards extablished by the IJC, and the Corps generally assumes a major responsibility for the IJC's technical studies. In addition, besides undertaking construction projects, the Corps sometimes funds (or controls the funding for) state activities. In summary, the Corps of Engineers has come to have a working association with the international, national, and state governmental institutions that are concerned with Great Lakes problems.

This influential role that the Corps has come to hold can readily be shown by looking at the IGLLB study. The Chief of Engineers of the Corps (North Central Division) was appointed the Chairman of the IGLLB. The Corps also assumed the major responsibility of all of the technical studies that were undertaken. At the same time, the Chief of Engineers was acting as a technical advisor to the President. When it appeared that legislation might have to be enacted regarding the implementation of the proposed regulation plan, the Corps was called upon to draft the needed legislative proposal. When the States expressed concern with the final IGLLB study, the Corps, as a member of the GLBC, was available to provide its technical expertise. It is apparent that the Corps of Engineers plays a principal planning and management role in the Great Lakes Basin.

On the other hand, the various States have had a limited role in providing input to the planning and managment within the Great Lakes Basin. The States have been, for the most part, excluded from the various investigatory studies that have been undertaken by the IJC, which is unfortunate since it is their people and territory that will

be the most affected by the final decisions that are made. The only input that the various States have had with regard to the IGLLB study relates to their membership in the GLBC. With the States providing the impetus, the "Ad Hoc Review Committee" was established by the GLBC, which reviewed the IGLLB study and offered ten recommendations to the IJC concerning the report. Several of the States had representatives on this "Ad Hoc Review Committee".

The various intergovernmental agencies to which the Great Lakes Basin States belong do not provide the States any authoritative functions in the management of the Great Lakes Basin. The Great Lakes Basin Commission (GLBC) gives the States a forum to meet and exchange viewpoints with the various federal members. However, since the GLBC is essentially a planning agency and not a regulatory agency, whatever dialogue and planning policies that are presented are essentially advisory and not a basis for action. The Great Lakes Commission (GLC) essentially provides a forum for the various States on an interstate level. Thus it appears that the States have no formal power in providing for the planning and management of the Great Lakes Basin. Except for persuasion, they have no formal power to affect the workings of the IJC in the investigatory studies that the IJC undertakes. Thus, in this instance, the States are in a reactive position; they have only been able to react to the various studies that the IJC has authorized and presented.

It appears that in the Congressional arena the Great Lakes Basin States may have greater influence on the IJC. It is apparent that the "Great Lakes States Delegation" can be a positive force to insure that the States' interest are considered in the over-all decision-making

process. This force becomes evident when the "Great Lakes States Delegation" petitioned the President about the problem of high water levels in the Great Lakes in the early 1970's. Ultimately, the United States filed an emergency application, granted by the IJC, that attempted to alleviate this problem on a temporary basis. Unfortunately, the various States often have differing viewpoints, which was the case here. The result was an uneasy compromise in which the lower Great Lakes States benefited by decreasing Lake Superior outflows with the understanding of a general United States commitment to compensation for resulting damages under certain limited conditions. Thus, differing viewpoints among the States may hinder the use of the "Great Lakes States Delegation" as a lever for action within the Great Lakes Basin. It should also be noted that navigation and power interests are strong and have a number of organized lobbyists in Washington. This is an important factor to note when considering which interests will be served in the Great Lakes Basin.

APPENDIX A

ECONOMIC EVALUATION OF FIRST YEAR OF OPERATION UNDER PLAN SO-901 COMPARED WITH 1955 MODIFIED RULE OF 1949 WITH MINIMUM ST. MARYS RAPIDS FLOW OF ONE-HALF GATE OPEN

MAY 1973 TO APRIL 1974

Indicated Probable Benefits ($ Millions)

	Water Supply (% frequency of time levels are exceeded)		
	High (5%)	Average (50%)	Low (95%)
Shore Property:			
Lake Superior	- 6.5	- 5.3	- 3.5
Lakes Michigan-Huron	+ 8.2	+ 8.1	+ 6.6
Lake Erie	+ 1.2	+ 1.2	+ 0.7
Lake Ontario*	+ 1.2	+ 0.9	+ 0.5
Sub-totals	+ 4.1	+ 4.9	+ 4.3
Power:			
St. Marys	- 0.1	- 0.2	- 0.2
Niagara & St. Lawrence	- 1.3	- 2.7	- 3.7
Sub-totals	- 1.4	- 2.9	- 3.9
Navigation:			
Entire System	+ 1.4	+ 1.8	+ 1.9
TOTALS	+ 4.1	+ 3.8	+ 2.3

Notes: *Excludes downstream effects

From: Table 29 of the Interim Report to the IJC from the International Great Lakes Levels Board, 15 March 1973, p.117.

APPENDIX B

REGULATION OBJECTIVE AND CRITERIA

The Commission considers that the objective of regulation of Lake Superior outflows should be to provide benefits to interests throughout the Great Lakes system without undue detriment to Lake Superior interests. To achieve this objective, all control works in the St. Mary's River, including but not limited to the 16-gate control structure and all power canals, their head gates and their by-passes, should be operated so as to keep the levels of Lake Superior and Michigan-Huron at the same relative position within their recorded ranges of stage and with respect to their mean levels. Under such operation, the level of Lake Superior would be maintained, as nearly as may be, within its recorded range below elevation 602.0 feet IGLD.

In order to accomplish the foregoing, the Commission should be given authority:

1. To amend its Orders of Approval dated May 26 and May 27, 1914;

2. To prescribe the plan of regulation for Lake Superior;

3. To direct the operation of all said control works, including the determination of the amount of water available for power purposes; and

4. To delegate its authority over regulation and operation to an international board appointed by the Commission, to the extent it deems appropriate.

From: IJC's "Special Interim Report", June, 1973.

APPENDIX C

LAKE ONTARIO REGULATION CRITERIA

"(a) The regulated outflow from Lake Ontario from 1 April to 15 December shall be such as not to reduce the minimum level of Montreal Harbour below that which would have occurred in the past with the supplies to Lake Ontario since 1860 adjusted to a condition assuming a continuous diversion out of the Great Lakes Basin of 3,100 cubic feet per second at Chicago and a continuous diversion into the Great Lakes Basin of 5,000 cubic feet per second from the Albany River Basin (hereinafter called the "Supplies of the past as adjusted").

"(b) The regulated winter outflows from Lake Ontario from 15 December to 31 March shall be as large as feasible and shall be maintained so that the difficulties of winter power operation are minimized.

"(c) The regulated outflow from Lake Ontario during the annual spring break-up in Montreal Harbour and in the river downstream shall not be greater than would have occurred assuming supplies of the past as adjusted.

"(d) The regulated outflow from Lake Ontario during the annual flood discharge from the Ottawa River shall not be greater than would have occurred assuming supplies of the past as adjusted.

"(e) Consistent with other requirements, the minimum regulated monthly outflow from Lake Ontario shall be such as to secure the maximum dependable flow for power.

"(f) Consistent with other requirements, the maximum regulated outflow from Lake Ontario shall be maintained as low as possible to reduce channel excavations to a minimum.

"(g) Consistent with other requirements, the levels of Lake Ontario shall be regulated for the benefit of property owners on the shores of Lake Ontario in the United States and Canada so as to reduce the extremes of stage which have been experienced.

"(h) The regulated monthly mean level of Lake Ontario shall not exceed elevation 248.0* with supplies of the past as adjusted.

"(i) Under regulation, the frequency of occurrences of monthly mean elevations of approximately 247.0* and higher on Lake Ontario shall be less than would have occurred in the past with the supplies of the past as adjusted and with present channel conditions** in the Galops Rapids (sic) Section of the St. Lawrence River.

"(j) The regulated level of Lake Ontario on 1 April shall not be lower than elevation 244.0. The regulated monthly mean level of the lake from 1 April to 30 November shall be maintained at or above elevation 244.0*.

"(k) In the event of supplies in excess of the supplies of the past as adjusted, the works in the International Rapids Section shall be operated to provide all possible relief to the riparian owners upstream and downstream. In the event of supplies less than the supplies of the past as adjusted, the works in the International Rapids Section shall be operated to provide all possible relief to navigation and power interests."

*U.S.L.S. 1935 Datum

**"Present channel conditions" refers to conditions as of March, 1955

From: 1956 Supplementary Order of Approval

APPENDIX D

ULTIMATE EFFECTS OF EXISTING DIVERSIONS ON WATER LEVELS (in feet)

	Raising effect of diversion from Long Lake-Ogoki	Lowering effect of diversion at Chicago	Lowering effect of Welland Ship Canal	Effect of a permanent 1000 cfs change in diversion at Chicago	
				Lake Levels Low and Medium	High
Annual Rate	5000 cfs	3100	7000	-	-
Lake Superior (unregulated)	.25*	-	-	-	-
Lake Michigan-Huron	.37	.23	.10	.08*	.07*
Lake Erie	.23	.14	.32	.05*	.05*
Lake Ontario (unregualted)	.24*	.15*	-	.05*	.04*

The term "Ultimate Effects" implies that a certain interval of time must elapse before the full effect of a diversion takes place. For example, it takes approximately 15 years for the diversion at Chicago to reach its ultimate effect on Lake Michigan. This point is reached when the rate of outflow from Lakes Michigan-Huron is no longer decreased by the effect of the diversion. The values listed above are based on the assumptions that each lake at the beginning of the month is at its mean level and the net total supply of water being received by each lake is equal to their outflows.

*From: "Maris Report", written by Special Master Albert B. Maris, Supreme Court of the United States, State of Wisconsin, Minnesota, Ohio, Pennsylvania, Michigan, New York v. State of Illinois and the Metropolitan Sanitary District of Greater Chicago, December 1966. Other values listed are from Louis D. Kirshner, "Effects of Diversions on the Great Lakes, June, 1968.

APPENDIX E

Adopted by GLBC,
November 20, 1974

RECOMMENDATIONS OF GREAT LAKES BASIN COMMISSION FOR REVIEW OF REPORT ON REGULATION OF GREAT LAKES WATER LEVELS

The Commission's views on the Main Report and on the Appendices available to it (B, D, E, and G) are as follows:

1. In view of the present high lake levels, reduction of shore damages is an immediate and major concern to the Great Lakes Basin Commission. Extensive shoreland damages have been experienced during the 1972-1974 high water period, making it imperative that adequate supporting data be acquired now to evaluate lake level regulation efforts and shore damage reduction measures. Additional data should be acquired as warranted by future conditions to permit more accurate and timely evaluation of management alternatives.

2. The Commission endorses the recommendation for further study and evaluation of the regulation of Lakes Erie and Ontario water levels to ensure that apparently reasonable alternatives in addition to SEO-42P receive adeqate consideration. However, benefits should not be derived from substantial lowering of the long-term mean and low levels of Lake Erie.

3. Plan SO-901 should be implemented, providing that adequate compensation and/or mitigation be provided for affected interests.

4. Consideration should be given to studies of the existing diversions into and out of the Great Lakes Basin. These considerations should be explored separately as well as in combination with the various proposed regulatory plans.

5. The cost of removing the existing physical constraints in the St. Lawrence River and the merits of a plan that would increase discharges to the St. Lawrence River and allow favorable re-regulation of Lake Ontario should be studied with full participation of concerned States at the earliest practicable date.

6. In the evaluation of lake level regulation plans, consideration should be given to the lake-wide impacts on water quality and, to the extent practicable, to the benefits derived from improved water quality through lake level regulation.

7. Additional consideration should be given to the effects on wetlands and estuarine areas of lake level regulation plans.

8. Any future regulation plans for Lakes Michigan and Huron should include requirements of deep-draft navigation by providing increased channel capacity for flood flows and more depth for navigation up to 31' in depth, if economically justified and environmentally acceptable. Such regulation plans in combination with lake levels and deep-draft navigation requirements may increase benefits and reduce costs over single-purpose projects.

9. The recommendations for improved hydrologic monitoring networks should be expanded to include meteorological and water quality parameters.

10. The Commission strongly supports the concept of land use regulation and structural setback requirements as policy measures for preventing and reducing future shoreline damages. The Commission believes that the IJC should place a high priority on this policy and that IJC recommend that the governments affected in Canada and the United States, with State and local involvement, take all appropriate actions to foster and facilitate the implementation of this policy. Further, the Commission recognizes that this policy will be a difficult one for State and local governments to fully implement. To enable shoreland use policy formulation and implementation, it is essential that the IJC recommend that the necessary scientific data be collected, analyzed, and disseminated as soon as practicable. The IJC should also explicitly recommend an extensive public education program, which should include the physical constraints and economic feasibility of structural shoreline erosion control devices and the desirability of a "design with nature" approach to shoreland management. Evaluation and explanation of the various land use regulation policy alternatives should also be included in this educational program. This public education effort should be conducted concurrently with data acquisition programs to insure prompt and thorough consideration and implementation of land use regulation of the shorelands.

(From: W.D. Marks, Chmn, Standing Committee on Coastal Zone Programs and Ad Hoc Committe for Review of IJC Levels Report, Great Lakes Basin Commission Memorandum to Committee Members, 1 April 1975).

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